PAGE 6

ISSUE 75P 8

Programming Issue

INSIDE......

PLAYER MISSILE GRAPHICS

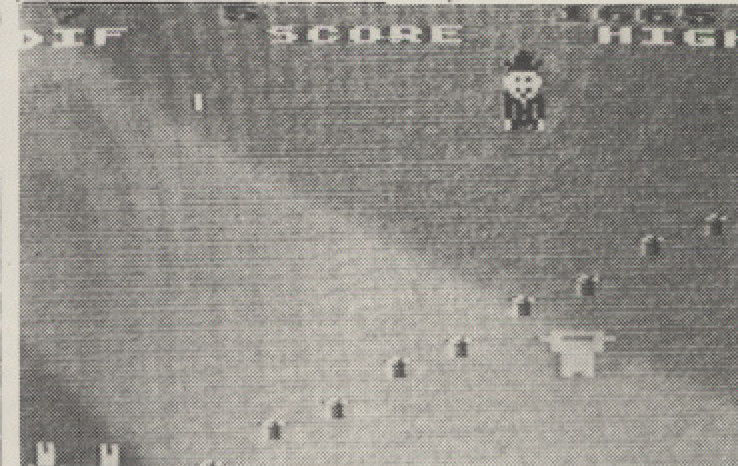
HARDWARE FEATURE

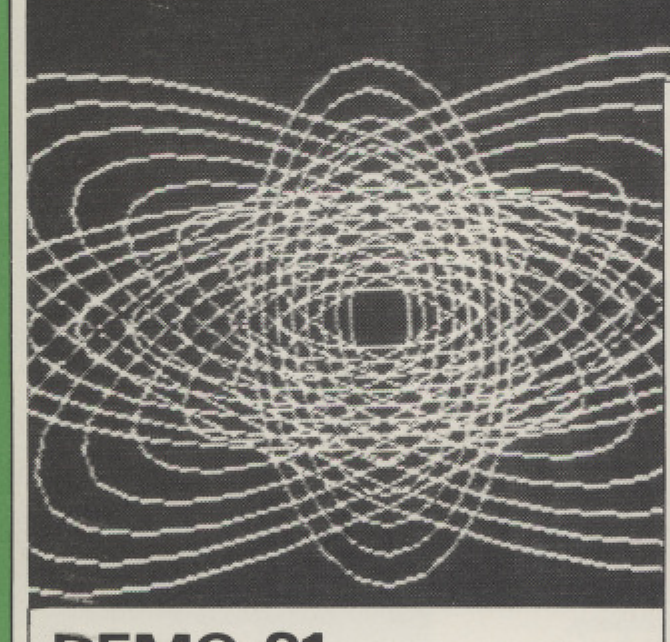
XL COLUMN

GRAPHICS 8 TEXT

Graph of 9.81/x^2+y^2







DEMO 21



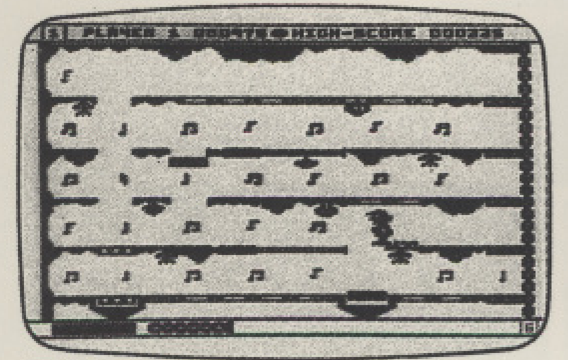
LOW PRICED SOFTWARE REVIEWED

ATARI™ USERS MAGAZINE........AN ATARI™ USERS MAGAZINE........AN ATARI™ USERS M

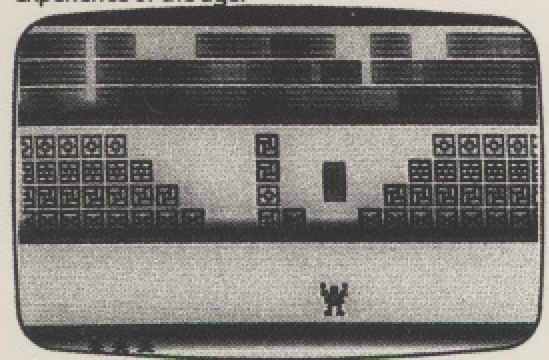
......GAMES........ATARI™.......NEWS........ATARI™.......PROGRAMS........ATARI™.......REVIEWS.....



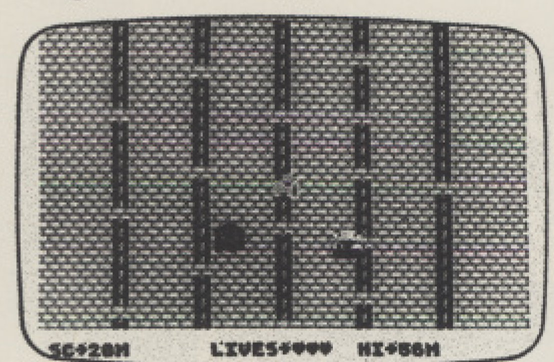
HYPERBLAST 32K by John Brierley
Simply the best arcade-action game ever written in 32K! Defend your Atari against 10 waves of the most awesome creatures ever to inhabit your TV screen!



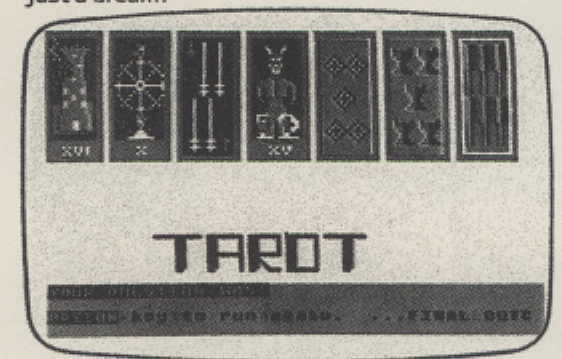
JET BOOT JACK 32K by Jon Williams
Our space-age jogger takes you on a Ten Screen chase through the vinyl vaults of the PRESSING PLANT! Bugs and gremlins make it the experience of the age!



BATTY BUILDERS 16K by Manuel D. Caballero
One of the best non-violent game programs ever written! Can you rebuild the walls before the falling blocks and TNT stop you?

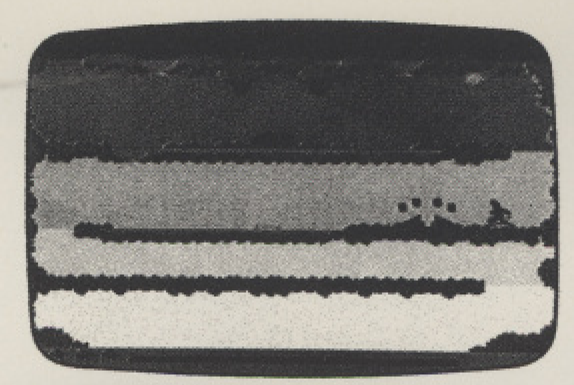


STEEPLE JACK 16K by Peter Hawkins
Climbing higher and higher up moving ladders, STEEPLE JACK encounters flying ghosts and falling elephants in his quest to reach the top! Is it real or just a dream?

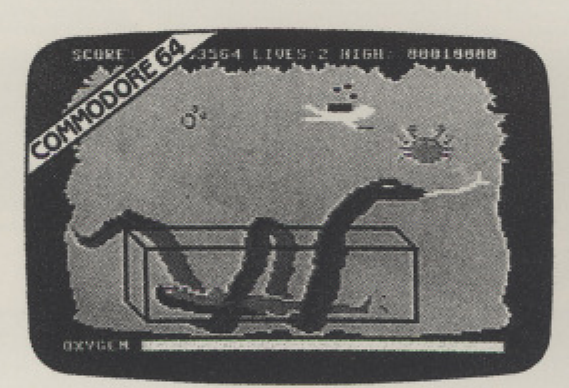


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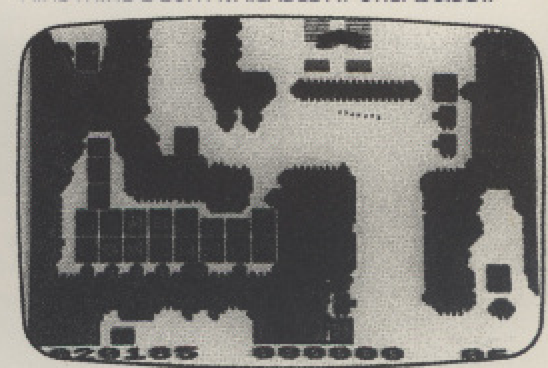
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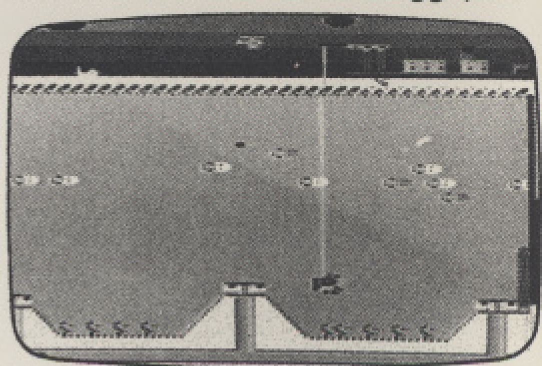
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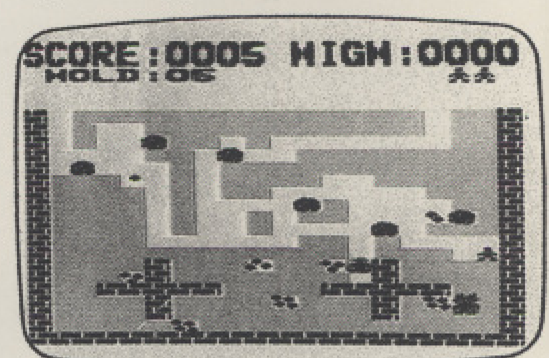
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Page 6 is a users magazine and relies entirely on readers' support in submitting articles and programs. The aim is to explore Atari computing through the exchange of information and knowledge and whilst we cannot, unfortunately, pay for articles published, we hope that you will gain satisfaction from seeing your work published and in turn we hope that you will learn from articles submitted by other readers.

Issue 8

February/March 1984

LISTINGS

PROGRAMMING SPECIAL

HARDWARE

REVIEWS

REGULAR COLUMNS

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From the Editor

GAMES OR NOT?

Many of you wrote with congratulations on issue 7 which, to celebrate the Christmas season, had some of the best games yet published but several people seemed to think that we had abandoned the aims outlined in our very first Editorial, to treat the Atari as 'more than just a games machine'. The truth is that it IS a games machine AND it is very much more. The READERS' POLL results show that a great many of you appreciate the serious side of your Atari and an equal number enjoy the games. It was particularly pleasing to see Tiny Text voted into second place and we will publish more programs like it if we can find them. Once in a while though we will have an issue devoted to games as they do form an integral part of the experience of owning an Atari computer. This issue has another game from Stan Ockers but is mostly about programming. I hope that you learn something new.

It is sad to see that Atari failed to make the impact it should have done over Christmas due to failure to get sufficient stocks to retailers. There seemed to be a lot of interest but many retailers just did not have anything to sell and a lot of potential Atari owners drifted away to other pastures. The 600XL is now creeping up the charts but has still not reached its rightful place. Things do seem to be improving though as certain distributors who have previously not touched Atari software have reported that small retailers are demanding software for the Atari. An encouraging sign after many shops seemed to have dropped Atari in the last year.

NOT HAD A REPLY?

A word about correspondence. Your letters are always most welcome but if you want a reply, please enclose a stamped addressed envelope and be patient. Editing and publishing PAGE 6 is an extremely hectic business and sometimes your letters do not get answered very quickly. You will get a reply if you are patient, sometimes even by return, but if you have just a simple query, why not phone? It is far easier for me and you will get an answer straight away. Don't stop writing altogether though for I need to know what interests you and how you feel about everything Atari. Despite all the modern technology, a letter is still the best way to express your thoughts.

News and New Products

There are many rumours in the U.S. at the moment that Atari have dropped the 1400XL and the 1450XLD from their range to concentrate on the 600XL and 800XL. One reliable source states however that Atari have NOT changed their plans and that the 1450XLD should be out in the Spring. This would seem to be borne out by a recent report that U.K. Marketing Director Eric Salaman has recently been to the States to finalise plans for the U.K. release and to agree the U.K. specification.

Atari has plenty of software lined up for release in the first quarter of this year. January was due to see **MS PACMAN**, **JUNGLE HUNT** and **JOUST** with **ROBOTRON** due in February. **MOON PATROL**, **MARIO BROTHERS** and **PENGO** are due in March with **MILLIPEDE** and **DONKEY KONG JR** in April. Play on, you arcade freaks!

Great news if you have an XL model that won't boot your software. Atari have a Translator program that boots in the old 400/800 operating system. See the XL column for further details.

Adventure International have signed an agreement with Marvel Entertainment Group for a series of at least 12 graphic adventures based on the great Comic heroes such as The Hulk, Spiderman and Captain America. Adventure International UK are working hard to bring the series to the U.K. as soon as possible but with conversions to all U.K. machines involved there is a great deal of work to do before The Hulk can burst upon your screen or Spiderman can cast his web over you.

English Software Co continues to increase its range of Atari software with six new titles to be released in mid-March. **SOLDIER OF FORTUNE** is an underground adventure 'with a windmill theme'. **TARROID** features perspective scrolling and is written by Manuel Caballero of FIREFLEET fame. The sequel to DIAMONDS is **DAN STRIKES BACK** which features vertical scrolling. Also due are **NEPTUNE'S DAUGHTER**, **ADVENTURES OF ROBIN HOOD** and **CITADEL WARRIOR**. All except Citadel Warrior are 16K and will retail at £9.95 on disk or cassette. Also due for release are the first two foreign language learning programs - **GERMAN** and **FRENCH** and a multi-utility to follow A.C.E. which features a Player Editor, a Multi-Character Editor and a Single Character Editor all in one program.

Saddest news of the year is the closure of Efficient Chips who last year began to provide Atari owners with a valuable alternative source of software and Atari support. Many PAGE 6 readers had found their mail order service to be excellent and their advice and support invaluable. The closure is due to 'the pressures of the computer jungle' and as a retailer who had Atari at heart, they will be sadly missed. The bulletin board ECABBS has also closed down but there are rumours that a couple of new Atari boards will spring up in its place.

New from Adventure International are **RALLY SPEEDWAY**, which is excellent, on ROM at £29.95 and **S.A.G.E.**, the Scott Adams Graphics Editor which was used to create the SAGA series. **S.A.G.E.** will enable you to mix highly complex graphics with your own BASIC program. A very powerful utility at £35.99. Also **Adventure No.13 - THE SORCEROR OF CLAYMORGUE CASTLE** should be available at £9.95 and there are rumours of Adventure 14 on its way.

THE PRICE REVOLUTION

Allrian Data Services have intoduced their FIRST GAME SERIES which is a re-release of some of the early titles from the Artworx catalog. The games were originally full priced titles and have been re-introduced at only £7.50 to give new owners an introduction to Atari at a modest cost. All games in the series will run in 16K and are available on cassette only.

Starcade have converted UP, UP and AWAY and SAVAGE POND to the Commodore 64 and have reduced the price for the Atari versions to only £8.95 to fall in line. They are available direct from Starcade and must now be two of the best value programs available for Atari anywhere.

Adventure International UK have announced price reductions virtually across their entire range. The Scott Adams Adventure series are now £9.95 with the graphics versions at £19.95. Arcade titles, including classics such as Preppie, Sea Dragon and Stratos, are down to £14.95. The company are also working on 16K versions of the adventures.

Who says Atari software is expensive!

Readers Letters

ATARI SUPPORT? WHERE?

Dear Sir,

There is no doubt in my mind that the Atari home computers are the best available. Some might argue that the BBC Model B is superior but I would disagree. I had three months experience on the BBC and apart from its highest resolution and 80 columns, both of which are impracticable without a monitor, I can safely say that the Atari knocks spots off it.

So the Atari is a superb machine, yet it gets little mention in magazines and has minimal support from U.K. software manufacturers. Why? Here are my theories and suggestions as to how we can help cure this frustrating situation.

Firstly, the lack of software support. I believe there are two reasons. The XYZ Software Company starts in somebody's bedroom because that somebody having bought his new computer discovered it had no software support and the only way to play games was to write them yourself. Since this problem has never arisen for Atari users due to the copious supplies of excellent, if overpriced, software from the U.S.A. and also its excellent quality, those users have not had to produce their own software or have felt incapable of matching the standards reached by our colonial cousins. Secondly, the already established BIG SOFTWARE CO LTD decides, quite rightly, before publishing a new title how to make the most money from it. How to do that? Sell to the largest market. What then are the most popular machines? A quick look through all the computer magazines... well it is clearly NOT the Atari, so no software for the Atari. This brings me to the next point, lack of mention in magazines.

Why should this be? There are several reasons. Firstly, because the Atari had been available for some time before the boom in micros they were rather overshadowed by the continual new releases (or should that be release dates!). Secondly because of the lack of U.K. software manufacturers there was a lack of software to review (Stateside manufacturers not needing or bothering to send review copies to U.K. magazines) and so the publishers were less aware of Atari than of the latest U.K. micro which they had on non-stop with copious supplies of software. Thirdly and perhaps most importantly was user apathy. If users are constantly writing to magazines with tips, ideas, programs, requests, problems, features, or even to just ask 'Why don't you devote more space to the Atari?', then they *will* respond. They must. They exist to make money, which they do by selling more copies. If they think that their market share will go up by giving more space to Atari then they will.

So what can you do? Write to the magazines, even if only to moan at the lack of Atari coverage. Write to the software houses, especially those who are currently 'testing the water' such as Llamasoft, Quicksilva and Romic asking for more. *YOUR VOICE DOES COUNT!* Also all you budding software authors, go to it! It is easier to produce better on the Atari because the hardware does so much more of the work for you and offers so much more. If you price your masterpiece reasonably, and hopefully get some good reviews, then people will flock to your door. Think about it. Would you pay £30 for an excellent American program if you could buy an excellent British program for £8.00??

Mr B., Herts

°° *Is there user apathy among Atari owners? What do you think? This letter was received BEFORE the Turn of The Year article in issue 7 and it echoes much of the sentiments of the lack of U.K software development. I would obviously prefer you to send your articles and programs to PAGE 6 but one of the aims of PAGE 6 is to encourage Atari users to write and program and the more that can be published for Atari the better for everybody. One of the reasons that people do not submit articles and programs to magazines is fear of ridicule. I like to consider PAGE 6 as a stepping off point for future authors or programmers and if you have your article or program published by PAGE 6 then it will give you the confidence and encouragement to submit articles to the 'glossies'. You will then even get paid for them! We may 'lose' contributors after their first submission but would hope that a certain 'loyalty' will remain and that they will continue to write for PAGE 6 as well as submitting articles to other magazines. In the long run everyone benefits.*

Please keep sending your letters on any subject, either in answer to queries raised by other readers or on matters that have not been covered before. Also send in any hints and tips that you feel might help other readers or amendments to any of the programs printed.

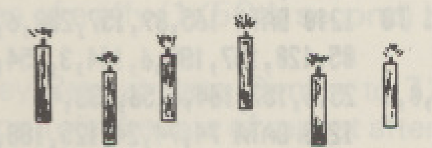
WILDWEST

Stan Ockers

Here's another great game from Stan Ockers to challenge both your playing and typing skill! Watch all those DATA statements which represent machine code routines.

One of the best things about Stan Ockers is that he lets you into the secrets of his games so that you can make changes to tailor the program to suit yourself. Wildwest is quite complicated for beginners because of the machine language routines included but some changes can be made quite easily. The program was written to demonstrate a 'falling' routine in machine language. All of the sound and dropping and catching routines are included in the Vertical Blank. This is how Stan says it can be changed.

'Timing is most critical in this program and you may wish to change some of the characteristics. Most of the timing is controlled by the DATA in three strings. Each byte in the string represents one difficulty level. DSPD$ (lines 1030,1040) bytes control the speed at which the dynamite falls. Lower numbers mean faster speeds. DDLY$ (lines 1050,1060) holds bytes which determine the delay time until another stick is dropped. CNT$ (1070,1080) determines the total number of sticks dropped in any one group. The number used for comparison with the random number in line 250 determines how often Dan switches direction. Increase the value to make him change direction more frequently. Experiment with some of the values and try to come up with the most challenging combinations'.



The program was written originally for paddles but as listed works with a joystick. To change back to paddles make the following amendments:-

1 Replace line 1150 with 1150 DATA 173,112,2,73,255
2 Replace the 417's in line 1110 with 398 (two places)
3 Change 'joystick 0' in line 640 to 'paddle zero'
4 Change STRIG(0) in line 230 to PTRIG(0)

Change the program to suit yourself and see if you can stop Dynamite Dan!

```
1 REM ******************************
2 REM *          WILDWEST          *
3 REM *             by             *
4 REM *        STAN OCKERS         *
5 REM *     from ACE NEWSLETTER    *
6 REM *   3662 VINE MAPLE DRIVE,   *
7 REM *   EUGENE, OREGON, U.S.A.   *
8 REM ******************************
9 REM
140 POKE 559,0:GOSUB 450:GRAPHICS 0:PO
KE 756,CSPAGE:GOSUB 605:GOSUB 860:GOSU
B 1000:GOSUB 1110:GOSUB 1330
150 ? "Press START to begin"
160 IF PEEK(53279)<>6 THEN 160
170 POKE 559,0:GOSUB 580:RESTORE 180:F
OR J=704 TO 712:READ A:POKE J,A:NEXT J
:BKG=56
180 DATA 0,44,92,34,66,14,50,0,56
190 DIF=1:SCORE=0:HATS=4:? CHR$(125):P
OSITION 21,0:? "dif    score    high":PO
KE 1761,100:POKE 1762,100
200 FOR J=53248 TO 53251:POKE J,100:NE
XT J:POKE 1763,2:POKE 1766,200:POKE 17
67,40:GOSUB 1370:BONUS=1000
210 Y=20:FOR X=3 TO HATS*3 STEP 3:GOSU
B 840:NEXT X:POSITION 14,0:? HIGH:A=US
R(1536):POKE 559,46:POKE 53277,3
220 IF PEEK(53279)=5 THEN DIF=DIF+1:IF
 DIF=10 THEN DIF=1
230 POSITION 2,0:? DIF:FOR J=1 TO 100:
NEXT J:IF STRIG(0)=1 THEN 220
240 GOSUB 1370:POKE 1760,0:POKE 1781,0
:POKE 1768,0:POKE 77,0
250 IF RND(0)<0.01*DIF THEN POKE 1780,
1
260 INCR=SCORE+PEEK(1768)*5:POSITION 6
,0:? INCR
270 IF PEEK(1760)=0 THEN 250
280 SCORE=INCR:SOUND 1,0,0,0
290 IF SCORE>BONUS THEN BONUS=BONUS+10
00:IF HATS<9 THEN HATS=HATS+1:Y=20:X=3
*HATS:GOSUB 840
300 IF PEEK(1768)<PEEK(1769) THEN GOSU
B 730:GOTO 320
310 DIF=DIF+1:IF DIF>9 THEN DIF=9
320 IF HATS=0 THEN 350
330 GOTO 220
340 REM * game over routine *
350 POSITION 1,7:? " ##    # #   # ##
 ## #   # ##  ##"
360 POSITION 1,8:? "#  # # # ## ## #
 #  # #   # #  #  #"
```

continued overleaf

WILDWEST continued

```
370 POSITION 1,9:? "#    # # # # # ##
 #  # ## ## ## #  #"
380 POSITION 1,10:? "# ## ### #   # #
 #  #  # #  #  ###"
390 POSITION 1,11:? "#  # # # #   # #
 #  #  ###  #  #  #"
400 POSITION 1,12:? " ##  # # #   # ##
  ##    #   ## #  #"
410 IF SCORE>HIGH THEN HIGH=SCORE
420 IF PEEK(53279)<>6 THEN 420
430 GOTO 190
440 REM * change character set *
450 DIM MCS$(42):RESTORE 460:FOR J=1 T
O 42:READ A:MCS$(J,J)=CHR$(A):NEXT J
460 DATA 104,169,0,133,203,133,205,169
,224,133,204,165,106,56,233,5,133,106,
24
470 DATA 105,1,133,206,162,4,160,0,177
,203,145,205,200,208,249,230,204,230,2
06,202,208,242,96
480 A=USR(ADR(MCS$)):CSPAGE=PEEK(106)+
1:CS=256*CSPAGE
490 RESTORE 500:FOR J=CS+8 TO CS+63:RE
AD A:POKE J,A:NEXT J:RETURN
500 DATA 128,2,32,1,134,1,32,8
510 DATA 2,8,128,2,64,8,32,2
520 DATA 32,130,12,28,20,20,20,20
530 DATA 0,0,8,9,9,9,10,10
540 DATA 0,0,128,128,128,128,128,128
550 DATA 10,10,10,143,143,138,170,0
560 DATA 128,128,128,200,200,136,168,0
570 REM * change display list *
580 DL=PEEK(560)+256*PEEK(561):POKE DL
+3,70:POKE DL+6,6:FOR J=DL+7 TO DL+28:
POKE J,4:NEXT J
590 RETURN
600 REM * instructions *
605 POKE 710,28:POKE 712,28:POKE 709,0
610 POKE 752,1:POSITION 5,1:? " # # #
WILDWEST # # #"
620 POSITION 2,3:? "Dynamite Dan has i
t in for you."
630 ? "He drops lighted sticks from th
e":? "top of the screen at rates which
"
640 ? "vary with the difficulty level.
":? "Using joystick 0 you move a sombr
ero"
650 ? "to catch them before they reach
 the":? "bottom and explode.  Each tim
e you"
660 ? "miss you lose a hat.  Lose all
hats":? "and the game is over."
670 ? :? "The difficulty level goes do
wn on":? "each miss, increases with ea
ch"
680 ? "sucessful group.  You may also
change":? "the difficulty level with t
he SELECT"
690 ? "key during breaks.  You get a b
onus":? "hat every 1000 points.  Use S
TART to"
700 ? "restart the game.":? :? "Inital
ization takes 18 seconds.":? "INITIALI
ZING  ";
705 POKE 559,34
710 RETURN
720 REM * explosion routine *
730 X=0:J=0:COL=20
740 IF PEEK(1664+X)=0 THEN 780
750 P=PEEK(1724+X)+PEEK(1736+X)*256:PO
KE P,1:POKE P+1,2:J=J+1:IF J=4 THEN J=
0
760 FOR K=0 TO 2:SOUND J,50+RND(0)*50,
8,13+K:NEXT K:POKE 712,COL+8*X
770 POKE P,PEEK(1712+X):POKE P+1,0:FOR
 L=1 TO 30*RND(0):NEXT L
780 X=X+1:IF X<12 THEN 740
790 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND
2,0,0,0:SOUND 3,0,0,0:POKE 712,BKG
800 X=HATS*3:Y=20:POSITION X,Y:? "  ":
POSITION X,Y+1:? "  ":HATS=HATS-1
810 DIF=DIF-1:IF DIF=0 THEN DIF=1
820 RETURN
830 REM * print hat *
840 POSITION X,Y:? "$%":POSITION X,Y+1
:? "&'":RETURN
850 REM * PM graphics *
860 DIM X$(1):A=ADR(X$):B=INT((A-512)/
1024+1)*1024:DIM F$(B-A+511):DIM P0$(1
28)
870 DIM P1$(128),P2$(128),P3$(128):POK
E 54279,B/257
880 DIM C1$(15):RESTORE 890:FOR J=1 TO
 15:READ A:C1$(J,J)=CHR$(A):NEXT J
890 DATA 16,56,186,124,0,40,0,40,16,19
8,170,146,130,68,68
900 P0$(1)=CHR$(0):P0$(128)=CHR$(0):P0
$(2)=P0$:P1$=P0$:P2$=P0$:P3$=P0$:P0$(2
6)=C1$
910 DIM C2$(11):RESTORE 920:FOR J=1 TO
 11:READ A:C2$(J,J)=CHR$(A):NEXT J
920 DATA 124,254,254,124,56,16,0,0,0,1
98,130
930 P2$(30)=C2$
940 DIM C3$(6):RESTORE 950:FOR J=1 TO
6:READ A:C3$(J,J)=CHR$(A):NEXT J:P3$(3
4)=C3$
950 DATA 170,184,170,184,170,184
960 DIM H$(9):RESTORE 970:FOR J=1 TO 9
:READ A:H$(J,J)=CHR$(A):NEXT J:P1$(80)
=H$:POKE 53257,1
970 DATA 124,198,124,124,56,56,56,56,4
0
980 RETURN
990 REM * various strings *
1000 DIM CSND$(15):RESTORE 1020:FOR J=
1 TO 15:READ A:CSND$(J,J)=CHR$(A):NEXT
 J
1010 A=ADR(CSND$):HI=INT(A/256):LO=A-2
56*HI:POKE 1774,LO:POKE 1776,HI
1020 DATA 30,142,1,25,140,1,20,138,1,1
5,138,1,0,0,0
1030 DIM DSPD$(9):RESTORE 1040:FOR J=1
 TO 9:READ A:DSPD$(J,J)=CHR$(A):NEXT J
1040 DATA 5,5,4,4,4,3,3,2,2,2,1,1
1050 DIM DDLY$(9):RESTORE 1060:FOR J=1
 TO 9:READ A:DDLY$(J,J)=CHR$(A):NEXT J
1060 DATA 30,25,20,15,10,5,5,5,5
1070 DIM CNT$(9):RESTORE 1080:FOR J=1
TO 9:READ A:CNT$(J,J)=CHR$(A):NEXT J
1080 DATA 15,20,25,30,35,40,45,50,55
1090 RETURN
1100 REM * create VBI string *
1110 DIM VBI$(417):RESTORE 1120:FOR J=
1 TO 417:READ A:VBI$(J,J)=CHR$(A):NEXT
 J:RETURN
1120 DATA 173,234,6,240,57,206,236,6,1
6,52,173,238,6,133,208,173,240,6,133,2
09,172,242,6
1130 DATA 177,208,240,21,141,0,210,200
,177,208,141,1,210,200,177,208,141,236
,6,200,140,242,6
1140 DATA 208,14,169,0,141,0,210,141,1
,210,141,234,6,141,242,6,216,173,224,6
,240,3,76,98,228
1150 DATA 162,0,173,120,2,41,4,208,2,1
62,252,173,120,2,41,8,208,2,162,3,138,
109,226,6
1160 DATA 141,1,208,141,226,6
1170 DATA 173,225,6,24,109,227,6,205,2
30,6,176,27,205,231,6,144,22,141,225,6
,141,0,208,141,2,208,141,3,208
1180 DATA 173,244,6,240,13,169,0,141,2
44,6
1190 DATA 173,227,6,73,255,141,227,6,2
06,228,6,16,78,173,245,6,205,233,6,176
,78,173,229,6,141,228,6
1200 DATA 162,11,189,128,6,240,5,202,1
6,248,48,52
1210 DATA 165,89,157,200,6,165,88,24,1
05,120,157,188,6,144,3,254,200,6,173,2
25,6,157,164,6,56,233,40
1220 DATA 74,74,24,125,188,6,157,188,6
,144,3,254,200,6,169,1,157,128,6,141,2
35,6,238,245,6
1230 DATA 162,11,189,128,6,240,110,222
,140,6,189,140,6,16,102,189,152,6,157,
140,6,189,188,6,133,208,189,200,6
1240 DATA 133,209,189,176,6,160,0,145,
208,165,208,24,105,40,133,208,157,188,
6,144,5,230,209,254,200,6
1250 DATA 254,212,6,189,212,6,201,11,1
44,28,201,17,176,24,189,164,6,24,105,9
,205,226,6,144,13
1260 DATA 56,233,18,205,226,6,176,5,14
4,30,24,144,165,189,212,6
1270 DATA 201,20,144,8,169,1,141,224,6
,24,144,42,177,208,157,176,6
```

continued on page 9

THE XL COLUMN

Most published articles and programs will apply equally to the 400/800 and the XL models but there are certain areas that are unique to the XL. This column will feature such material and we would like your feedback on anything you may have discovered that does or does not work on an XL.

There is quite a lot of software that will not work on the XL but help is at hand with The Translator from Atari. This boots in the old 400/800 Operating System and will allow virtually any program to run. PAGE 6 supplied The Atari Center in Birmingham with a copy and they have been able to boot every item which previously would not run with the exception of A.E. and Bandits. The Translator is available in the U.S. from Atari on disk or cassette at cost but at the time of writing Atari UK had not worked out the U.K. release. If you want one, tell Atari.

The Sting from issue 5 will not work on the XL - at least not as intended - as it uses the keyboard speaker in the 400/800.

The Revision B basic in the XL has a different token file structure which means that many of the Basic routines are not at the same addresses as the 400/800. The system reset routine in lines 6 and 100 of Scramble in issue 6 will not therefore work but it is such a neat little routine that we will let you know as soon as the equivalent on the XL is worked out.

Useful XL POKEs

729 Key Repeat Delay. Alters the time before a key repeats. POKE with 0 - 255 to represent multiples of a jiffy (1/50th second) before key repeats.

730 Key Repeat Rate. Similar to 729 except that it controls the rate of repeat after the initial delay.

731 Key Click. POKE with 255 to disable sound through the TV. POKE with 0 to enable.

732 Help Key. 17 is stored here if the Help key is pressed, 81 when Help and Shift are pressed and 145 with CTRL and Help. Clear with 0.

621 Keyboard. POKE with 255 to disable keyboard or 0 to enable.

622 Text Scroll. POKE with 255 followed by GR.0 to fine scroll text. POKE with 0 to return to normal.

That's all for this issue. If you discover anything new which works on the XL but not on the 400/800, we want to know.

WILDWEST continued from page 8

```
1280 DATA 169,3,145,208,24,144,27,169,
1,141,234,6,169,0,157,128,6,157,212,6,
157,176,6
1290 DATA 238,232,6,173,232,6,205,233,
6,176,209,202,16,196
1300 DATA 169,0,141,2,210,141,3,210,16
2,11,189,128,6,208,6,202,16,248,76,98,
228
1310 DATA 165,20,41,1,141,2,210,169,6,
141,3,210,24,144,235
1320 REM * insert VBI *
1330 RESTORE 1350:FOR J=1536 TO 1545:R
EAD A:POKE J,A:NEXT J
1340 VBI=ADR(VBI$):HI=INT(VBI/256):LO=
VBI-256*HI:POKE 1538,LO:POKE 1540,HI:R
ETURN
1350 DATA 104,160,0,162,0,169,7,76,92,
228
1360 REM * init. page 6 values *
1370 FOR J=1664 TO 1675:POKE J,0:NEXT
J:FOR J=1748 TO 1759:POKE J,0:NEXT J
1380 A=ASC(DSPD$(DIF)):FOR J=1676 TO 1
699:POKE J,A:NEXT J
1390 A=ASC(DDLY$(DIF)):POKE 1764,A:POK
E 1765,A
1400 A=ASC(CNT$(DIF)):POKE 1769,A:POKE
 1768,0
1410 RETURN
```

■

Programming

Player Missile Graphics .. an introduction

If you are a newcomer to the Atari you may not even know that Player Missile Graphics exist for Atari seem to want to keep it a secret. There is no mention in the manuals and using Player Missile Graphics is not as easy as some of Atari's other features. You may know what Player Missile Graphics are but don't know how to use them or you may even be completely in the dark. Either way read on for an introduction to the marvellous world of Players and Missiles. Before we begin let me say that this is merely an introduction and if you find that you already know the subject well why not write a program and article as a follow on to help other users?

Player Missile Graphics are relatively easy to set up and use in simple terms but begin to get more complicated when you require FAST movement or when vertical movement is needed. The purpose of this article is to introduce Player Missile Graphics and we will therefore leave vertical movement and the like for a future article. I have said that Player Missile Graphics are relatively easy but there are a number of steps to learn and it is best to go through these stage by stage. The various steps do not necessarily need to be approached in the same order but it is best to adopt a consistent approach to help you to remember the proceedure for other programs. Some of the stages give you options but all are required to set up Player Missile Graphics. Here are the various steps.

1. Design your Players
2. Reserve RAM for PMG
3. Set the Graphics mode for the playfield
4. Tell ANTIC where to find PMG
5. Clear out PMG area
6. Set up initial parameters
  a) Resolution
  b) Width
  c) Horizontal & vertical positions
  d) Colours
7. Place players/missiles in memory
8. Set priority
9. Activate PMG

Once all of the above steps have been accomplished you will have your players and missiles on screen and then only two more things are required - movement and collision detection.

Normally tutorials on Player Missile Graphics take you through these stages and put a single player on screen leaving you to guess what to do next. I have written a simple game to demonstrate not only the setting up of Players and Missiles but also showing priority and collisions and giving you the opportunity of expanding the game using your new found knowledge. You can even play the game - in a limited form - as it stands! Quickshot is the name of the game and if you look at the listing, lines 1000 - 1200 contain the routine that sets up Player Missile Graphics and should be referred to as we go along. Let's start.

DESIGN THE PLAYERS.

Designing players is virtually the same as redefining characters except that although the image is eight bits wide the height can be up to 128 bytes in double-line resolution and 256 bytes in single-line resolution. There is not room in this article to go over bit-mapped images but the article on Character Redefinition in Issue 3 will provide the necessary background as will Memories in Issue 6. The first task then is with pencil and graph paper or a character design utility. Sketch out your player images and convert them to DATA. The DATA for your image is put into the program starting from the top of the image. We are using two players and the DATA is in lines 1080 and 1085.

RESERVE RAM FOR PLAYERS.

Player Missile Graphics require their own area of RAM which must not be interfered with by other parts of the program. The easiest way to provide such an area of protected memory is to lower RAMTOP which Basic recognises as the upper limit of available memory. Location 106 holds the top of memory in pages - 256 bytes - and we can POKE a lower number in here to fool Basic into thinking that there is less memory available. Double-line resolution Player Missile Graphics requires 1024 bytes - 4 pages - and so in line 1000 we lower RAMTOP by first PEEKing the current value, then subtracting 4 and finally POKEing the new value into 106. Basic now thinks that memory ends 4 pages lower than it actually does and we can use the area above the new RAMTOP without interference.

SET GRAPHICS MODE

In line 1010 we make a graphics call for the

article and program by Les Ellingham

mode we require as a background so that ANTIC - the chip that handles the Graphics display - can set up a Display List below the new RAMTOP. By lowering RAMTOP we have in effect 'hidden' the old display list.

TELL ANTIC WHERE TO FIND PMG

ANTIC needs to know where we have put our Player Missiles and we tell it by using location 54279 which is known as PMBASE. The figure to use is the page number at the beginning of Player Missile Graphics. We have used the variable TOP to define the new RAMTOP and this is where our Player Missile Graphics area starts. In line 1020 we therefore POKE 54279,TOP. We also need to know the actual memory location later on and this is calculated in this line by multiplying the number of pages (TOP) by 256.

CLEAR OUT PMG MEMORY

The memory we have reserved is probably full of unwanted data which might affect the images we are going to place there so, in line 1030, we clear this by POKEing zeroes in each memory location. Remember we are using 4 pages - 1024 bytes - and we must therefore POKE in 1024 zeroes from the beginning of player memory which we calculated in line 1020 as PMMEM.

SET UP INTITIAL PARAMETERS

So far the steps taken have been mandatory but we now come to a point where we can choose the form our players and missiles take. When you have typed in the listing, I suggest that you experiment by changing the values in lines 1040 - 1070 to see the various effects possible.

RESOLUTION: We have a choice between single-line resolution and double-line resolution. In single-line resolution each byte of the player image takes up one TV scan line whilst in double-line resolution two scan lines are used giving a taller but less detailed image. For double-line resolution, location 559 should be POKEd with 46 as we have done in line 1040 and the number to use for single-line resolution is 62. If you wish to use single-line resolution, you require 2048 bytes of player memory and the initial steps of reserving RAM will have to be amended accordingly.

WIDTH: Players may be normal, double or quadruple width. Registers 53256-53259 hold the values for players 0-3. POKE with 0 or 2 for normal width, 1 for double width or 3 for quadruple width. Normal width will do us so we POKE in the appropriate value in line 1045.

HORIZONTAL & VERTICAL POSTIONS: In lines 1050 & 1055 we set variables for the initial positions in which we wish our images to appear. Any number between 0 and 255 may be used but only the middle range will appear on the screen. P0Y and P1Y hold the vertical positions of our players and P0X and P1X hold the horizontal positions. The precise positions that are visible may vary slightly on different TV sets so you are encouraged to experiment here with different values. In line 1055, M0Y, M1Y, M0X and M1X are the vertical and horizontal positions of the missiles associated with each player. Locations 53252-53255 control the horizontal position of the missiles and these are POKEd in in line 1065. There are no registers for vertical positions and so we must leave this for later.

COLOUR: Each player can be a different colour and locations 704-707 are POKEd wth a number representing the colour required. The number is derived from the normal SETCOLOR statement and is the HUE*16+LUMINENCE.As we are only using two players we use only locations 704 and 705 in line 1070.

PLACE PLAYERS/MISSILES IN MEMORY

We now come to the point where we actually place our images into the area we have reserved. This is also the point where we define the vertical positions of our players and missiles. The Player-Missile area is subdivided into six seperate areas which are used - or not - for each image. Figure 1 shows the division of this area. To place Player 0 in memory we first insert the DATA representing the player shape in line 1080 and then in line 1090 we READ this DATA and POKE it into the area allowed for Player 0. This is 512 bytes up from the start of the Player-Missile area (PMMEM) and we can place the image at any position from 512 to 639 which is the upper limit for Player 0. So, line 1090 READs the DATA and POKEs it, byte by byte, into the Player 0 area (PMMEM+512) at the vertical position required (P0Y). This proceedure is repeated for Player 1 with the DATA in line 1085 and insertion of the player in line 1095. Missiles are placed similarly in the area beginning at PMMEM+384 but the proceedure for defining missiles is different. Each missile can be only one or two bits wide as all four missiles are packed into

continued on page 14

Programming

Rename Your Variables

Matthew Jones, Chippenham

Ever wanted to change the variable names in your Atari BASIC program? Ever tried? It's very difficult and error prone to list each line of large programs for alteration, so here is a method which is very simple and very effective.

The first and most important step is to make a backup copy in case something goes wrong. It also helps if the program already works properly as debugging with new names is awkward. The next step is to enter Listing 1 - with your program loaded. If your program uses lines 15000 to 15020, simply relocate my routine. Listing 1 uses the variables I,B,J and C. If you do NOT use these variables in your program substitute numeric variables that you have used so that no extra variables are added to the Variable Name Table which is our target. If you do not have a printer, change the 'P:' in line 15000 to 'E:' and get ready with CTRL-1 a pen and some paper. Type GOTO 15000 and a list of variables will be printed (or displayed - get scribbling). You will have a list something like this

```
I
START
STRING$
ARRAY(
```

In this example there are only five variables but you should of course have many more. You may notice that the last character of each name has an ASCII code greater than 127, i.e. it is inverse video. This is the 'End of Name' marker.

```
15000 OPEN #5,0,0,"P:":J=PEEK(130)+PEE
K(131)*256:B=PEEK(132)+PEEK(133)*256
15010 FOR I=J TO B:C=PEEK(I):? #5;CHR$
(C);:IF C>127 THEN ? #5
15020 NEXT I:CLOSE #5:END
```

Listing 1

Your next task is to give each variable its new name. It is imperative that each name is unique and this should be double checked - write the alphabet down the left side of a sheet of paper and list each variable against its initial letter. Some variables end in a dollar sign '$' and some with a bracket '('. The new name for these must also end with the appropriate symbol as these represent strings and arrays so BASIC interprets data it has differently. All new names should be legal, don't use non alphanumeric characters or reserved words.

When you have decided on the new names, add up the total number of characters in each list. If the new list is much smaller in characters you are safe but if they are nearly the same or the new list is longer, enter a few new very long variables by typing ABCDEFGHIJ etc. in direct mode until the length of the new variable names far exceeds the previous difference.

Now enter the second listing without deleting the first. Amend it if necessary as outlined above and note that IN$ should be DIMensioned to about 50. Type GOTO 15050 and a number will appear followed by a question mark. You must now type in the first variable name. BASIC expects only the last character of the name to be over ATASCII 127 so do not enter any inverse text, the program will do the inverting. Before you press RETURN, make sure you have not made a mistake. If you have, edit it. If you spot an error after you have pressed RETURN press BREAK and then type GOTO 15050 again. You MUST start again as you can't do anything clever because the variable name table will be in a mess and could crash the system.

```
15050 J=PEEK(130)+PEEK(131)*256:B=PEEK
(132)+PEEK(133)*256:I=J
15060 ? I,:INPUT IN$:FOR C=1 TO LEN(IN
$):POKE I+C-1,ASC(IN$(C,C))+128*(C=LEN
(IN$)):NEXT C
15070 I=I+LEN(IN$):IF I>B-10 THEN ? "
[ESC,BELL]FIN"
15080 GOTO 15060
```

Listing 2

When you get to the end of your list, type in two CONTROL COMMAS, which will appear like hearts on the screen, followed by RETURN. When the ? appears again, press BREAK, type GOTO 15000 and you will get the new list of variables. Check that these are alright and if not type GOTO 15050 and start again! If all is okay, LISTing the program will show the new version.

The final step is to delete lines 15000 to 15080, LIST the program to tape or disk and then type NEW and ENTER it again. This corrects the BASIC pointers to the table and also its length. If no illegal variables were used, everything should now be finished, so (C)SAVE it. If duplicate names were used, previous references will now all refer to one variable so problems will occur.

One thing you may like to do is to have illegal variable names like (C)83 F.BLOGGS. To do this

continued on page 19





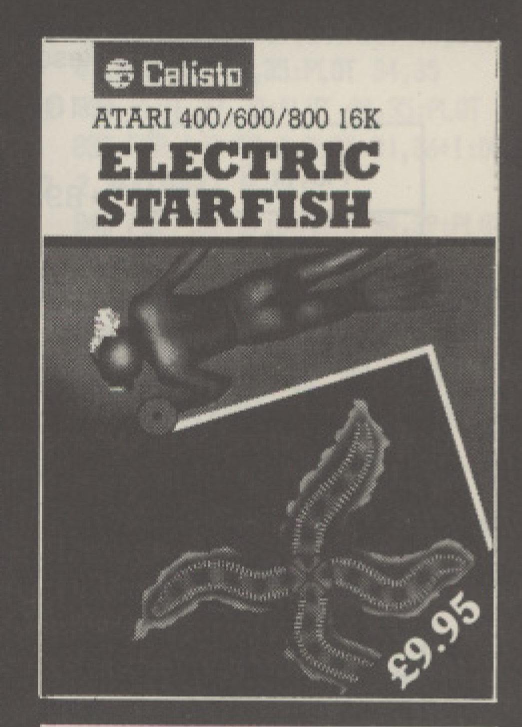


1. **WARLOCK** - Pilot your craft through the caverns to reach level 4 - if you can! Are you skilful enough to pass the laser gates, mines and floating bombs to rescue the drone *and get back again!!* 32K cassette and 48K disk versions of this stunning arcade game. 'The best piece of software for the Atari to come out of the U.K.' *Mike Reynolds-Jones, The Atari Center.*

2. **ELECTRIC STARFISH** - On the distant planet of Thule water must be conserved and you must control the constructor robots to build the resevoirs. The only problem is that the native preda-tor of Thule, a kind of giant electric starfish, is deadly and will stop you if it can. Can you store enough water to ensure that Thule survives?

3. **CANNIBALS** - Chased by Robots, Skeletons, Ghosts, Aliens and Cannibals and armed only with a shovel! Can you dig the holes fast enough to trap and kill these nightmare creatures? You will have to be agile and climb up and down ladders to stop their advance. 5 skill levels with one random level for 1 or 2 players.

4. **ARTIST** - The Artist is a user friendly utility to enable the production of your own pictures on your Atari computer. Pictures are produced with a joystick in Graphics 7 assisted by easy-to-learn automatic options which are fully described in the accompanying notes. Colour control, circle, draw to, fill plus the ability to save and reload to cassette or disk and other features. An easy to use utility ideal for the budding artist or experienced programmer.



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Player Missile Graphics continued from page 11

Layout	Double Resolution	Single Resolution
	+1024	+2048
Player 3		
	+896	+1792
Player 2		
	+768	+1536
Player 1		
	+640	+1280
Player 0		
	+512	+1024
Missiles 0 1 2 3		
	+384	+768
Unused		
Start of PMG area (PMMEM)		

Figure 1 - layout of Player Missile Graphics area

one byte. The value 15 used is the binary number to turn on the first four bits representing the missiles for Players 0 and 1. Figure 2 gives more details of turning on the various missiles.

SET PRIORITY

Players can appear in front of or behind other players or background objects. Location 623 controls this priority and in line 1110 we set priority with the number 1 to start with as this can be changed as the program is run. When you run the program you may press any key and the contents of this location will change and be displayed enabling you to see the different priorities available.

ACTIVATE PMG

Finally the big moment! Despite all the work so far no players or missiles will appear on the screen until you enable Player Missile Graphics. All you do is POKE 53277 with 3 and - provided you have got the above steps right - presto! You should have Players and Missiles.

There is much, much more to Player Missile Graphics and this article has merely served as an introduction to get you started and whet your appetite. In future issues we will cover vertical movement and give a machine code routine for moving all four players. In the meantime experiment and have fun.

Further references.

GTIA TUTORIAL - PAGE 6 Issue 2 for POKEing values to colour registers.
CHARACTER REDEFINITION - PAGE 6 Issue 3 for a guide to defining characters which also holds good for players.
MEMORIES - PAGE 6 Issue 6 for an explanation of binary values.
MAPPING THE ATARI by Ian Chadwick (COMPUTE! PUBLICATIONS) for full details of EVERY location used in Player Missile Graphics.

QUICKSHOT

The game is deliberately simple to enable you to follow the routines easily. The only new area introduced is collision detection. Locations 53256-53259 may be PEEKed to determine if a missile has hit a player. The value returned depends on which player has been hit and you can then send the program to a routine to determine the outcome of that 'collision'. Lines 160 and 185 do this. You can also use locations 53248-53251 for missile to playfield collisions, locations 53252-53255 for player to playfield collisions and 53260-53263 for player to player collisions.

Want to play the game? You are the white cowboy and when the bell sounds you must outdraw your opponent. You can move your player right and left and fire with the trigger. Use the keyboard to set different priorities and watch how your player can move in front of or behind other objects. There are no score routines and no control of the second player, it's up to you to add these yourself. Study the listing carefully and you should be able to figure out how to move the second player and find out where to put scoring routines.

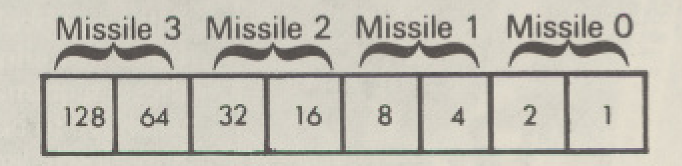
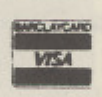


Figure 2 - DATA for missiles. Add together numbers for missiles required. Note each missile can be either 1 or 2 bits wide.

```
1 REM ******************************
2 REM *          QUICKSHOT          *
3 REM *                              *
4 REM *  A PLAYER MISSILE GRAPHICS  *
5 REM *            DEMO              *
6 REM *      by Les Ellingham        *
7 REM * Written for PAGE 6 MAGAZINE *
8 REM ******************************
9 REM
10 GOSUB 1000:GOSUB 800:PRIOR=1
19 REM ******* MOVE PLAYER 0 *******
20 POKE 536,INT(RND(0)*240+15)
25 IF PEEK(536)=0 THEN GOTO 100
30 S=STICK(0):P0X=P0X+(S=7)-(S=11):M0X
=P0X+2:POKE 53248,P0X:POKE 53252,M0X:P
OKE 53253,M1X
35 IF PEEK(764)<255 THEN GOSUB 250
40 GOTO 25
99 REM *******  THE DRAW!!  *******
100 POKE 53252,M0X:POKE 53253,M1X
105 REACT=INT(RND(0)*10+5):BADSHOT=INT
(RND(0)*100+20)
110 FOR W=1 TO 10:SOUND 0,50,10,10:NEX
T W:SOUND 0,0,0,0
115 IF STRIG(0)=0 THEN GOTO 300
120 POKE 536,REACT
125 IF STRIG(0)=0 THEN GOSUB 150:GOTO
20
130 IF PEEK(536)=0 THEN GOSUB 175:GOTO
 20
140 GOTO 125
149 REM ***** THE GOODIE SHOOTS *****
150 FOR I=15 TO 1 STEP -0.75:SOUND 1,5
0,8,I:NEXT I:SOUND 1,0,0,0
155 FOR I=1 TO 100 STEP 2:POKE 53252,M
0X+I
160 IF PEEK(53256)=3 THEN POP :GOSUB 2
00:GOTO 170
165 NEXT I
170 RETURN
174 REM ***** THE BADDIE SHOOTS *****
175 FOR I=15 TO 1 STEP -0.75:SOUND 1,4
0,8,I:NEXT I:SOUND 1,0,0,0
180 FOR I=1 TO BADSHOT STEP 2:POKE 532
53,M1X-I
185 IF PEEK(53257)=3 THEN POP :GOSUB 2
20:GOTO 195
190 NEXT I
195 RETURN
199 REM ******** BADDIE DIES ********
200 POKE 53278,1:POKE 53252,M0X:FOR I=
100 TO 10 STEP -1:SOUND 0,I,10,8:NEXT
I:SOUND 0,0,0,0:RETURN
219 REM ******** GOODIE DIES ********
220 POKE 53278,1:POKE 53253,M1X:FOR I=
50 TO 150:SOUND 0,I,10,8:NEXT I:SOUND
0,0,0,0:RETURN
249 REM ****** RESET PRIORITIES *****
250 PRIOR=PRIOR*2:IF PRIOR>8 THEN PRIO
R=1
255 POKE 623,PRIOR:? "623 = ";PRIOR:PO
KE 764,255:RETURN
299 REM ***** YOU DREW TOO SOON *****
300 FOR I=1 TO 30:SOUND 0,80,2,10:NEXT
 I:SOUND 0,0,0,0:GOTO 100
799 REM ****** DRAW PLAYFIELD *******
800 SETCOLOR 2,12,8:SETCOLOR 4,9,8:SET
COLOR 0,1,4
805 COLOR 2:PLOT 16,39:DRAWTO 16,30:DR
AWTO 17,30:DRAWTO 17,39:PLOT 14,32:DRA
WTO 14,34:DRAWTO 15,34
810 PLOT 19,31:DRAWTO 19,33:DRAWTO 18,
33
815 COLOR 3:PLOT 55,38:DRAWTO 55,29:DR
AWTO 56,29:DRAWTO 56,38:PLOT 53,30:DRA
WTO 53,33:DRAWTO 54,33
820 PLOT 58,30:DRAWTO 58,32:DRAWTO 57,
32
825 COLOR 1:PLOT 34,33:DRAWTO 40,33:PL
OT 34,34:PLOT 37,34:PLOT 40,34:DRAWTO
41,34:PLOT 33,35:PLOT 34,35
830 PLOT 37,35:PLOT 40,35:PLOT 41,35
835 FOR I=0 TO 2:PLOT 31,36+I:DRAWTO 4
2,36+I:NEXT I
840 PLOT 32,39:DRAWTO 34,39:PLOT 38,39
:DRAWTO 40,39
850 PLOT 70,39:PLOT 70,38:PLOT 71,38
860 RETURN
999 REM **** SET UP PM GRAPHICS *****
1000 TOP=PEEK(106):TOP=TOP-4:POKE 106,
TOP
1010 GRAPHICS 5
1020 POKE 54279,TOP:PMMEM=TOP*256
1030 FOR I=0 TO 1023:POKE PMMEM+I,0:NE
XT I
1040 POKE 559,46
1045 POKE 53256,0:POKE 53257,0:REM PLA
YERS WIDTH
1050 P0Y=85:P1Y=85:P0X=100:P1X=189
1055 M0Y=90:M0X=105:M1X=191
1060 POKE 53248,P0X:POKE 53249,P1X
1065 POKE 53252,M0X:POKE 53253,M1X
1070 POKE 704,14:POKE 705,0
1080 DATA 48,120,0,48,48,60,48,48,56,4
0,100
1085 DATA 12,30,0,12,12,60,12,12,28,20
,38
1090 FOR J=PMMEM+512+P0Y TO PMMEM+512+
P0Y+10:READ BYTE:POKE J,BYTE:NEXT J
1095 FOR J=PMMEM+640+P1Y TO PMMEM+640+
P1Y+10:READ BYTE:POKE J,BYTE:NEXT J
1100 POKE PMMEM+384+M0Y,15
1110 POKE 623,1
1120 POKE 53277,3
1200 RETURN
```



DEMO 21 ... an Atari art show

Turn your Atari into a continuous art show with Demo21. Atari's high resolution graphics allow some superb geometric designs and this program packs in twenty one different drawings to provide hours of enjoyment. If you are not a mathmetician you will be amazed at the beautiful drawings that can be produced with different formulae and you may even be tempted to take a course in geometry to produce your own! Whoever thought that maths could be so beautiful!

If you do not want to type all of the listing in one go just type up to line 60 and the subroutines in lines 5000 and 32000 - 32020 and then add each demo as you wish.

```
2 REM ******************************
3 REM *                            *
4 REM *      21 GRAPHIC DEMOS      *
5 REM *            By              *
6 REM *       Clive Savage         *
7 REM *                            *
8 REM ******************************
9 REM
10 REM *********** C1 *************
20 GOSUB 32000:DEG :X1=159:Y1=95:GRAPH
ICS 8+16:COLOR 1:SETCOLOR 4,1,0:SETCOL
OR 2,1,0:X(0)=SIN(0):Y(0)=COS(0)
30 FOR M=10 TO 90 STEP 20:PLOT X(1)*M+
X1,Y(1)*M+Y1:FOR D=0 TO 360 STEP 15
40 A=X(D)*M+X1:B=Y(D)*M+Y1:DRAWTO A,B:
NEXT D:NEXT M
50 M=90:FOR D=0 TO 360 STEP 10:A=X(D)*
M+X1:B=Y(D)*M+Y1:PLOT X1,Y1:DRAWTO A,B
:NEXT D
60 GOSUB 5000
75 REM SIN/COS VALUES ARE IN ARRAY XY
80 REM PLOT AND DRAWTO IS USED TO
90 REM SPEED UP THE CIRCLE DRAWING
100 REM IN LINES 20 AND 35
110 REM *********** C2 *************
120 DEG :X1=159:Y1=95
130 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,8:F=0:L
=360:M=90:S=60:N=0:Z1=3
140 FOR D=F+N TO L+N STEP S:A=SIN(D)*M
+X1:B=COS(D)*M+Y1:PLOT X1,Y1:DRAWTO A,
B:NEXT D
150 N=N+1.5:M=M-Z1:IF M<30 THEN 170
160 GOTO 140
170 FOR D=F-N TO L-N STEP S:A=SIN(D)*M
+X1:B=COS(D)*M+Y1:PLOT X1,Y1:DRAWTO A,
B:NEXT D
180 N=N-1.5:M=M+Z1:IF M=90 THEN 200
190 GOTO 170
200 GOSUB 5000
210 REM *********** C3 *************
220 DEG :X1=159:Y1=95
230 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,8:M=90:
S=20:F=0:L=360:X=X1:Y=Y1:N=1.1
240 FOR M=10 TO 90 STEP 5
250 FOR D=F TO L STEP S:A=X(D)*M+X1:B=
Y(D)*M+Y1:PLOT A,B:DRAWTO X,Y:X=A/N:Y=
B/N:NEXT D:NEXT M
260 GOSUB 5000
270 REM *********** C4 *************
280 DEG :X1=159:Y1=95
290 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,8:M=90:
S=30:F=0:L=360:X=X1:Y=Y1
300 FOR M=10 TO 90 STEP 5
310 FOR D=F TO L STEP S:A=X(D)*M+X1:B=
Y(D)*M+Y1:PLOT X1,Y1:DRAWTO A,B:DRAWTO
 X,Y:X=A:Y=B:NEXT D:NEXT M
320 GOSUB 5000
330 REM *********** C5 *************
340 DEG :X1=159:Y1=95
350 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,10:M1=9
0:X=X1:Y=Y1:S=15:S1=10
360 COLOR 1:FOR M=0 TO 90 STEP S:X=X(1
)*M1+X1:Y=Y(1)*M+Y1:PLOT X,Y:FOR D=0 T
O 360 STEP S1:A=X(D)*M1+X1:B=Y(D)*M+Y1
370 DRAWTO A,B:NEXT D:NEXT M
380 FOR M=0 TO 90-S STEP S:FOR D=0 TO
360 STEP S1:A=X(D)*M+X1:B=Y(D)*M1+Y1:D
RAWTO A,B:NEXT D:NEXT M
390 COLOR 1:FOR N=0 TO 180 STEP 3:PLOT
 X(N)*M1+X1,Y(N)*M1+Y1:DRAWTO X(180+N)
*M1+X1,Y(180+N)*M1+Y1:NEXT N
400 GOSUB 5000
410 REM *********** C6 *************
420 DEG :X1=159:Y1=95
430 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,8:M=90:
S=26:F=0:L=360:M1=159
440 A=X(1)*M1+X1:B=Y(1)*M+Y1:PLOT A,B
450 FOR D=F TO L STEP S:X=X(D)*M1+X1:Y
=Y(D)*M+Y1:DRAWTO X,Y:NEXT D
460 S=S+2:IF S<>182 THEN 450
465 GOSUB 5000
480 REM *********** C7 *************
490 DEG :X1=159:Y1=95
500 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,8:M=10:
S=120:F=0:L=360:N=0
510 FOR M=10 TO 90 STEP 20:FOR N=0 TO
120 STEP 20:A=SIN(N)*M+X1:B=COS(N)*M+Y
1:PLOT A,B
520 FOR D=F+N TO L+N STEP S:X=SIN(D)*M
+X1:Y=COS(D)*M+Y1:DRAWTO X,Y:NEXT D:DR
AWTO A,B:NEXT N:NEXT M
525 GOSUB 5000
540 REM *********** C8 *************
550 DEG :X1=159:Y1=95
560 F=0:L=360:N=0:M=4:S=45
570 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,8
580 FOR M=5 TO 90 STEP 1.5:A=SIN(N)*M+
X1:B=COS(N)*M+Y1:PLOT A,B
590 FOR D=F+N TO L+N STEP S:X=SIN(D)*M
+X1:Y=COS(D)*M+Y1:DRAWTO X,Y:NEXT D:DR
AWTO A,B:N=N+1.5:NEXT M
595 GOSUB 5000
```

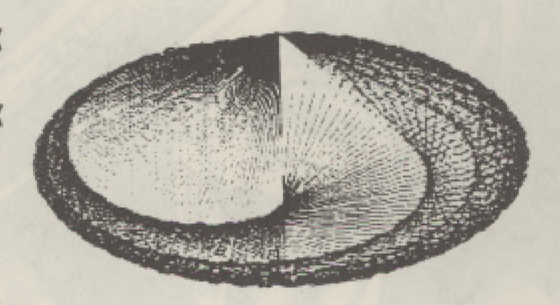
by Clive Savage

```
610 REM *********** C9 *************
620 DEG :X1=159:Y1=95
630 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,8:F=0:L
=360:M=20:S=3:M1=45:X1=25
640 FOR D=F TO L*3 STEP 2:A=SIN(D)*M1+
X1:B=COS(D)*M1+Y1:X1=X1+S/6:E=E+4:PLOT
 SIN(180+E)*M1+A,COS(180+E)*M1+B
650 DRAWTO SIN(E)*M1+A,COS(E)*M1+B:NEX
T D
655 GOSUB 5000
670 REM *********** C10 ************
680 DEG :X1=159:Y1=95
690 F=0:L=360:N=0:M=90:S=45:M1=10
700 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,8
710 FOR N=0 TO 360 STEP 45:A=X(N)*M+X1
:B=Y(N)*M+Y1
720 FOR D=F TO L STEP S:X=X(D)*M+X1:Y=
Y(D)*M+Y1:PLOT A,B:DRAWTO X,Y:NEXT D:N
EXT N
725 GOSUB 5000
740 REM *********** C11 ************
750 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1
,0:SETCOLOR 2,1,0:SETCOLOR 0,1,12
760 F=0:L=360:Z=0:M=90:M1=150:S=120:X1
```

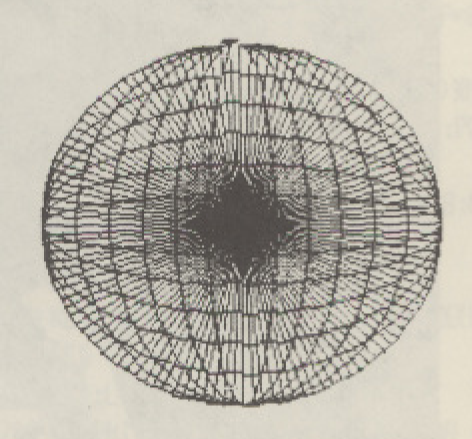
continued on page 18

DEMO 21 continued from page 16

```
=159:Y1=95:DEG
770 FOR N=0 TO 360 STEP 6:A=SIN(N)*M1+X1:B=COS(1)*M+Y1
780 FOR D=F TO L STEP S:X=SIN(D+N)*M1+X1:Y=COS(D)*M+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D
790 A=SIN(1)*M1+X1:B=COS(N)*M+Y1
800 FOR D=F TO L STEP S:X=SIN(D)*M1+X1:Y=COS(D+N)*M+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D:NEXT N
805 GOSUB 5000
820 REM *********** C12 *************
830 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1,0:SETCOLOR 2,1,0:SETCOLOR 0,1,12
840 F=0:L=360:Z=0:M=90:M1=150:S=15:X1=159:Y1=95:DEG :N=45
850 FOR M=10 TO 90 STEP 5:A=SIN(N)*M+X1:B=COS(1)*M+Y1
860 FOR D=F TO L STEP S:X=SIN(D+N)*M+X1:Y=COS(D)*M+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D
870 A=SIN(1)*M+X1:B=COS(N)*M+Y1
880 FOR D=F TO L STEP S:X=SIN(D)*M+X1:Y=COS(D+N)*M+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D:NEXT M
885 GOSUB 5000
900 REM *********** C13 *************
910 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1,0:SETCOLOR 2,1,0:SETCOLOR 0,1,12
920 F=0:L=360:Z=0:M=90:M1=1.7:S=10:X1=159:Y1=95:DEG :N=3
930 FOR M=10 TO 90 STEP 5:A=SIN(N)*M*(M1)+X1:B=COS(1)*M+Y1
940 FOR D=F TO L STEP S:X=SIN(D*N)*(M*M1)+X1:Y=COS(D)*M+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D
950 A=SIN(1)*(M*M1)+X1:B=COS(N)*M+Y1
960 FOR D=F TO L STEP S:X=SIN(D)*(M*M1)+X1:Y=COS(D*N)*M+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D:NEXT M
965 GOSUB 5000
990 REM *********** C14 *************
1000 DEG :X1=159:Y1=95:G=45
1010 F=0:L=360:N=0:M=90:S=90:X1=90:Y1=95
1020 GRAPHICS 8+16:SETCOLOR 4,1,0:SETCOLOR 2,1,0:SETCOLOR 0,1,8:COLOR 1
1030 FOR X1=90 TO 230 STEP 3:A=SIN(N)*M+X1:B=COS(N)*M+Y1:PLOT A,B
1040 FOR D=F+N TO L+N STEP S:X=SIN(D)*M+X1:Y=COS(D)*M+Y1:DRAWTO X,Y:NEXT D:DRAWTO A,B:N=N+2:NEXT X1
1050 GOSUB 5000
1060 REM ********** C15 *************
1070 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1,0:SETCOLOR 2,1,0:SETCOLOR 0,1,12
1080 F=0:L=360:Z=0:M=90:M1=150:S=15:X1=159:Y1=95:DEG :N=45
1090 FOR M=20 TO 90 STEP 10:M1=M*1.7
1100 A=SIN(N)*M1+X1:B=COS(1)*M+Y1
1110 FOR D=F TO L STEP S:X=SIN(D+N)*M1+X1:Y=COS(D)*M+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D
1120 A=SIN(-N)*M1+X1:B=COS(1)*M+Y1
1130 FOR D=F TO L STEP S:X=SIN(D-N)*M1+X1:Y=COS(D)*M+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D
1140 A=SIN(1)*M1+X1:B=COS(1)*M/2+Y1
1150 FOR D=F TO L STEP S:X=SIN(D)*M1+X1:Y=COS(D)*M/2+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D
1160 A=SIN(1)*M/2+X1:B=COS(1)*M+Y1
```



```
1170 FOR D=F TO L STEP S:X=SIN(D)*M/2+X1:Y=COS(D)*M+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D:NEXT M
1180 GOSUB 5000
1190 REM ********** C16 *************
1200 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1,0:SETCOLOR 2,1,0:SETCOLOR 0,1,12
1210 F=0:L=360:Z=0:M=90:M1=150:S=10:X1=159:Y1=95:DEG :N=45
1220 FOR N=10 TO 90 STEP 5:A=SIN(N)*N+X1:B=SIN(1)*90+Y1
1230 FOR D=F TO L STEP S:X=SIN(D+N)*N+X1:Y=SIN(D)*90+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D:NEXT N
1240 FOR N=10 TO 90 STEP 5:A=SIN(1)*N+X1:B=SIN(N)*90+Y1
1250 FOR D=F TO L STEP S:X=SIN(D)*90+X1:Y=SIN(D+N)*N+Y1:PLOT A,B:DRAWTO X,Y:A=X:B=Y:NEXT D:NEXT N
1260 GOSUB 5000
1270 REM ********** C17 *************
1280 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1,0:SETCOLOR 2,1,0:SETCOLOR 0,1,12
1290 F=0:L=360:Z=0:M=10:M1=90:S=15:X1=20:Y1=95:DEG :REM X1=159 Y1=95
1300 FOR Z=F TO L/2 STEP 3:J=X(Z):K=Y(Z):X=X(1)*M:Y=Y(1)*M1:A=X*K-Y*J+X1:B=X*J+Y*K+Y1:PLOT A,B
1310 FOR D=F TO L STEP S:X=X(D)*M:Y=Y(D)*M1:G=X*K-Y*J+X1:H=X*J+Y*K+Y1:DRAWTO G,H:NEXT D
1320 X1=X1+4:IF X1>319 THEN 1340
1330 NEXT Z
1340 GOSUB 5000
1360 REM FORMULA TO ROTATE POINT X,Y
1370 REM TO POINT A,B BY Z DEGREES IS
1380 REM J=SIN(Z)  K=COS(Z)
1390 REM A=X*K-Y*J+X1    B=X*J+Y*K+Y1
1400 REM ********** C18 *************
1410 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1,0:SETCOLOR 2,1,0:SETCOLOR 0,1,12
1420 F=0:L=360:Z=0:M=1:M1=90:S=12:X1=159:Y1=95:DEG
1430 J=SIN(Z):K=COS(Z):X=SIN(1)*M:Y=COS(1)*M1:A=X*K-Y*J+X1:B=X*J+Y*K+Y1
1440 FOR D=F TO 1400 STEP S:Z=Z+40:J=SIN(Z):K=COS(Z)
1450 X=SIN(D)*M:Y=COS(D)*M1:G=X*K-Y*J+X1:H=X*J+Y*K+Y1:PLOT A,B:DRAWTO G,H:A=G:B=H:NEXT D
1460 GOSUB 5000
1470 REM ********** C19 *************
1480 GRAPHICS 8+16:COLOR 1:SETCOLOR 4,1,0:SETCOLOR 2,1,0:SETCOLOR 0,1,12
1490 F=0:L=360:Z=0:M=8:M1=90:S=10:X1=159:Y1=95:DEG :N=6:Z=Z+N
1500 FOR M1=20 TO 80 STEP 10
1510 J=SIN(Z):K=COS(Z):X=SIN(1)*M:Y=COS(1)*M1:A=X*K-Y*J+X1:B=X*J+Y*K+Y1:PLOT A,B
1520 FOR D=F TO 900 STEP S:J=SIN(Z):K=COS(Z)
1530 X=SIN(D)*M:Y=COS(D)*M1:G=X*K-Y*J+X1:H=X*J+Y*K+Y1:PLOT A,B:DRAWTO G,H:A=G:B=H:Z=Z+N:NEXT D:NEXT M1
1550 GOSUB 5000
```



```
1560 REM ********** C20 *************
1570 DEG :X1=39:Y1=95:REM 192*80 RES.
1580 GRAPHICS 9:COLOR 15:M1=75:X=X1:Y1=Y1/2:S=10:S1=20:POKE 712,16
1590 M1=M1/2:FOR M=0 TO 19/2:X=SIN(1)*M+X1:Y=COS(1)*M1+Y1:FOR D=0 TO 360 STEP S1:A=SIN(D)*M+X1:B=COS(D)*M1+Y1
1600 PLOT X,Y:DRAWTO A,B:X=A:Y=B:NEXT D
1610 C=C+3:IF C>15 THEN C=1
1620 COLOR C:NEXT M
```

continued on page 27

ENGLISH SOFTWARE COMPETITION

The competition turned out to be more difficult than intended although there were more than 20 entrants with all 20 words correct and the winners were drawn at random. As indicated a few prizes were reserved for entrants under 12 who mostly managed 19 correct words. Why was it so hard? Blame the Atari which generated the word search puzzle and also managed to sneak in quite a few words of its own which confused a lot of you! Never trust your Atari!

These are the hidden words

```
***CAVERUNNER***
****B*FIREFLEET*
*NTAROTCARD*K***
*O***XMC**TI****
*H***EEB*SR*S***
*T***N**AT*D****
*A***O*LSSN*****
*R***NBR*OT*****
*A***RI*M**I****
*M**EA*A****C***
***P*II*********
**Y**D**********
*H**************

*****BC*********
******A*********
****M*SS********
****ANS*I*******
****R*E*RC******
***UG*TERAWTFOS*
**TYO*T***M*****
*E*RRUE*********
R**OP***********
***M*A**********
**OE**G*********
*C*M***E********
*DISK***6*******
```

ENGLISH SOFTWARE

XENON RAID
HYPERBLAST
BOMBASTIC
AIRSTRIKE
FIREFLEET
DIAMONDS
CAVERUNNER
MARATHON
TAROT CARD
ACE

ATARI WORLD

CASSETTE
COMPUTER
MEMORY
RAM
BASIC
PROGRAM
RETURN
DISK
PAGE 6
SOFTWARE

and here are the winners

P.S.Withers, Cheshire
R.J.Mortimer, Middlesex
J.M.Sharpe, Hants
D.Stuart, Kent
M.Broszko, Bolton
Rupert Simpson, West Sussex
A.E.Starkie, Preston
Ken Jagger, Leeds
Stephen Salt, Lincoln
David Hoyton, Tyne & Wear
Richard Solly, Surrey
James Cooper, Surrey
Simon Jervis, Nottingham
Carl Lund, Cleveland
Gary Waddell, Tyne & Wear
Paul Bird, Slough
J.Coleman, West Midlands
Mark Bradley, Cheshire
Jamie Maslin, Berks
Simon Currigan, Birmingham

Congratulations to you all and thanks to English Software Co for the prizes.

THE TOP TEN

1	POLE POSITION	Atari	16K	ROM
2	DIAMONDS	English Software	16K	C
3	GATEWAY TO APSHAI	Epyx	16K	ROM
4	DONKEY KONG	Atari	16K	ROM
5	M.U.L.E.	Electronic Arts	16K	ROM
6	MINER 2049er	Big Five	16K	ROM
7	BLUE MAX	Showcase	32K	C/D
8	MAGIC WINDOW	Quicksilva	16K	C
9	SNOKIE	Funsoft	16K	C
10	JOUST	Atari	16K	ROM

Chart compiled 26/1/84

Supplied by
The Atari Center 021 643 9100

```
5 REM ******************************
6 REM *             MOIRE            *
7 REM *         PHIL GRIFFIN         *
8 REM ******************************
10 FOR C=2 TO 5
20 GRAPHICS 8+16:SETCOLOR 2,0,0:COLOR
1
30 FOR Y=1 TO 190 STEP C:PLOT 1,Y:DRAW
TO 159,190-Y:PLOT 160,Y:DRAWTO 318,190
-Y:NEXT Y
40 FOR X=1 TO 159 STEP C:PLOT X,0:DRAW
TO 160-X,190:PLOT 159+X,0:DRAWTO 319-X
,190:NEXT X
50 FOR I=1 TO 1500:NEXT I:NEXT C
60 GOTO 10
```

RENAME YOUR VARIABLES
continued from page 12

you must enter it as MCM83FMBLOGGS initially and after you have LISTed and ENTERed it for SAVEing, type:

```
FOR I=PEEK(130)+PEEK(131)*256 TO
PEEK(132)+PEEK(133)*256:? I,CHR$
(PEEK(I)):NEXT I
```

As the variables go past note the locations (numbers on the left) of the M's and when READY appears, POKE in the decimal numbers - from appendix C of the BASIC manual - for each illegal character in place of the allotted M. Do not use numbers greater than 127. The program will SAVE, LOAD, LIST and RUN properly but editing of lines with these variables will not be possible. Have fun!

Programming

Graphics 8 Text

John Hulme, London

When I used to look at pictures of the display from some micros which allow free mixing of text and graphics I often used to feel a twinge of envy as this did not seem possible on my Atari. I could have used a modified display list but the text and graphics would still have been on seperate lines. Phil Griffin's article on Memory Mapped Screens (Issues 4 and 5) gave me an idea of how to do it and, to my great surprise, the program which emerged proved to be both simple and short.

The graph program with this article gives a practical example of mixed graphics and text in Graphics Mode 8. The graph is meant to represent a gravity 'well' with the Earth at its centre but the interest to most programmers will be the labelling of the axes.

What the program does is to copy the character data stored in ROM starting at address 57344 and POKE it directly onto the screen. Each character is stored as eight numbers between 0 and 255 and the number is converted to binary and displayed with a 1 indicating a pixel illuminated and a 0 indicating a pixel extinguished. The character is made up of eight such rows. Phil Griffin's article in issue 5 demonstrated that screen data is stored in the same way in Graphics 4, 6 and 8.

GRAPHICS MODE	COLUMNS	ROWS (Split screen)	ROWS (Full screen)
4	10	40	48
6	20	80	96
8	40	160	192

Figure 1

In order to find the character you want look at table 9.6 of the ATARI BASIC REFERENCE MANUAL. For example, character number 2 is the quotation mark and this character starts at 57344+2*8 - *8 because of the eight items of data per character. The placement of the character is done by adding the appropriate position to the start of screen memory which is found by PEEK (88)+ PEEK(89)*256. The number to be added is the row which you require multiplied by the number of columns supported by your Graphics mode (figure 1). To translate this to English, or rather Basic, see listing 1 which POKEs character number 2 onto a graphics screen in mode 8.

```
1 REM SIMPLE EXAMPLE TO POKE QUOTE
     QUOTATION MARKS ON SCREEN
10 GRAPHICS 8+16:M=57344:S=PEEK(88)+25
6*PEEK(89):R=16:C=10:COLOR 1
20 FOR I=0 TO 7
30 POKE S+(I*40)+(R*40)+C,PEEK(M+I+(2*
8))
40 NEXT I
50 GOTO 50
```

In line 10 R is the required row and C is the required column.
In line 30 I*40 places each item of character data beneath the previous one and the multiplier should be varied according to the graphics mode (see figure 1).

A similar technique can be used for Graphics 3,5 and 7 to produce multi-coloured text but you will have to design your own character set because of the different way in which screen data is stored. I presume that data is stored in the same way as for ANTIC modes 4 and 5 but I have to leave that for you to discover as I only have a black and white set.

```
1 REM ******************************
2 REM *   TEXT ON GRAPHICS 8 SCREEN  *
3 REM *             BY               *
4 REM *         JOHN HULME           *
5 REM ******************************
6 REM
10 GRAPHICS 8+16:POKE 710,0:M=57344:S=
PEEK(88)+256*PEEK(89):GOTO 200
95 REM - SUBROUTINE TO POKE CHARACTER
     ONTO SCREEN
100 FOR I=0 TO 7
110 POKE S+I*40+R*40+C,PEEK(M+I+A*8)
115 NEXT I
120 RETURN
195 REM - TEXT DATA
200 C=10:R=2
210 FOR T=0 TO 20
220 READ A
230 DATA 39,114,97,112,104,0,111,102,0
240 DATA 25,14,24,17,15,120,62,18,11,1
21,62,18
250 GOSUB 100
260 C=C+1:NEXT T
275 GOSUB 1000
300 C=10:R=70
310 FOR T=0 TO 5
```

```
320 READ A
330 DATA 120,124,33,56,41,51
340 GOSUB 100
350 R=R+8:NEXT T
400 C=12:R=120
410 FOR T=0 TO 5
420 READ A
430 DATA 121,13,33,56,41,51
440 GOSUB 100
450 C=C+1
460 NEXT T
500 C=12:R=98
510 FOR T=0 TO 5
520 READ A
530 DATA 122,15,33,56,41,51
540 GOSUB 100
550 C=C+1:R=R-8
560 NEXT T
990 GOTO 990
999 REM - DRAW GRAPH
1000 COLOR 1
1010 FOR Y=10 TO -2 STEP -0.5
1020 FOR X=10 TO -10 STEP -1
1030 TRAP 1090
1040 F=((9.81/(X^2+Y^2))*6+48)+Y*4
1045 IF X=10 THEN PLOT (X-Y)*4+170,F+3
0:GOTO 1070
1050 DRAWTO (X-Y)*4+170,F+30
1060 IF X=-10 AND Y=-2 THEN RETURN
1070 NEXT X
1080 NEXT Y
1090 DRAWTO (X-Y)*4+175,191
1100 GOTO 1070
```

CONTACT

PLANETFALL: Can anyone tell Michael Jackson how to get past the mutant-infested Bio-Lab? If so give him a ring on 01 960 0932 or write to 53, Brewster Gardens, London, W10 6AQ

SANDS OF EGYPT:

The ladder can be GOT
The torch is lit
Can't get back through the CRACK with it
Must I take it and how?
Anyone 'in there', out there?
HELP! I'm on my own. Alas!

Frustrated in real-time. David Will Henderson, 2,Gunknowe Bank, Tweedbank, Galashiels, Selkirk, TD1 3SE. Please write.

COMPUTE! BACK ISSUES: CHF TECH M. PRIST is missing out. Can anyone help? Write to CHF TECH M. Prist, SGTS MESS, RAF KINLOSS, FORRES, MORAY 1V36 0VH

GOLDEN BATON: I know that the yellow crab likes salted slugs but how do you give them to the crab so that you can pass on to the lake? John Dimmer, 71, Duncan Drive, Elgin, Moray, IV30 2NH. Tel. 0343 44695

CRAWLEY MANOR: I've got through the plywood hall, through the 'dial' door and wandered around but nothing. What am I doing wrong? Also John Dimmer.

810 DRIVE WANTED: Has anyone got an 810 that they could let me have *very* cheaply. I need it to assist with the subscription database and as a back up in case anything goes wrong with my drive. If it does, goodness knows how you will get your next copy of PAGE 6! ...

Les Ellingham

Listing Conventions

As far as possible, the listings will be 38 characters wide to allow you to match up to the screen, but where control characters are explained in a line this will not be possible.

Three types of characters are difficult to reproduce in a listing—Inverse, Control and Inverse Control.

INVERSE—all characters to be typed in inverse are underlined.

CONTROL—characters which require the CTRL key to be pressed are shown in square brackets [ ]. Press CTRL and the key shown in the bracket. Characters which require the ESC key to be pressed first will show ESC,CTRL followed by a word or words to describe the key to be pressed. You may have to refer to your Basic Reference Manual if you do not understand some of the keys.

INVERSE CONTROL—characters will be shown in pointed brackets <>. Follow the instructions for control characters but press the Atari key first.

The listings should be typed as accurately as possible and MUST be typed exactly if TYPO is used to check them.

All programs featured in PAGE 6 will run in 16K unless otherwise stated.

Hardware

THE HARD(WARE) FACTS

EVERYTHING YOUR WANTED TO KNOW ABOUT YOUR ATARI BUT WERE AFRAID TO ASK (PART 1)

We are pleased to welcome John J. Smith to our pages with a regular column on hardware. John's articles will feature a mixture of hard facts, ideas and projects. You will be shown inside the 800 and find out what is inside a cartridge among many other things in future Hard(ware) Facts.

JOYSTICK PORTS

The first thing most people seem to want to know is what you can plug into the I/O ports on the front of the Atari 800. The answer is many things but in order to do so, especially if you build something yourself, you will need to know what the pin connections are. Figure 1 shows the pin connections of port 1 and the remaining ports are the same. It is important to note that the connections shown are exactly as you see them when sitting in front of the computer. The connections on the computer are plugs with pins (male) and if you want to connect something you will need female sockets. These are called 9 way D type connectors and manufacturers seem to call them DB9S connectors. You will most probably get them from your local shop, if you have one, or by mail order and everyone seems to have their own part numbers. One source of supply is Maplin Electronics, P.O.Box 3, Rayleigh, Essex and their part number for the 9 way sockets is RK61R. I suggest that you also use covers to hide the wires and solder connections and the Maplin part number is RK 62S. These are sometimes known as 'hoods'.

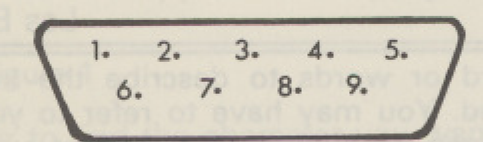


Figure 1 - controller port connections

Pin 1 Joystick - forward
Pin 2 Joystick - back
Pin 3 Joystick - left
Pin 4 Joystick - right
Pin 5 B paddle (potentiometer) input
Pin 6 Trigger input
Pin 7 5 volts available
Pin 8 Ground (Earth)
Pin 9 A paddle (potentiometer) input

Now that you know what the I/O port connections are maybe you want to build something to plug in. Let's start with something simple as even I have not yet figured out how to build a trackball! When I do I will let you have details. How about a joystick? At first this seems a good idea but if you are a real beginner, even this can be a challenge as you have to get the lever to pivot in all directions without falling apart. No, for your first project I would suggest a simple push-button cursor control to provide similar controls to a joystick i.e. Up, Down, Left, Right and Fire. Five seperate push buttons are required and the wiring diagram for these is shown in Figure 2.

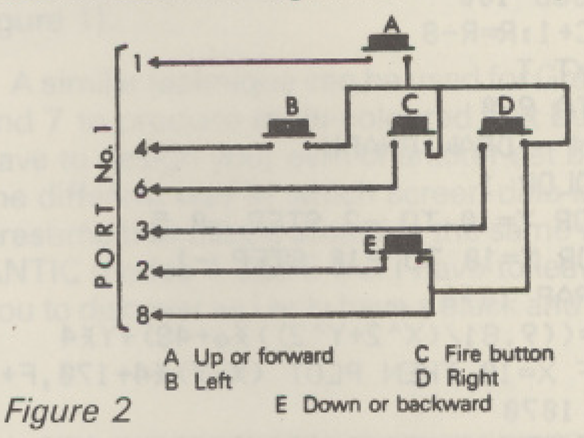


Figure 2

Note that pin 8 is common to all five push buttons and that pins 5,7 & 9 are unused so that you only need a six way cable for wiring. One possible suggestion for mounting is to use a small handy sized box and mount the buttons as shown in figure 3. A plastic ring can cover buttons A, B, D and E so that a rocking action can be used. How you achieve the final design is up to you!

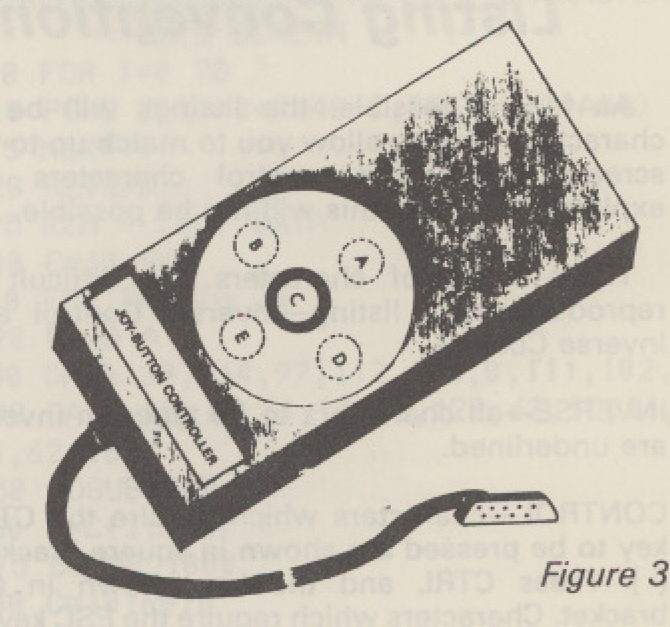


Figure 3

a regular column by John J. Smith

ATARI PORT 3 Pin No.	MX80 /PRINTER Pin No.	ALSO KNOWN AS
1	2	DATA 1 LINE
2	3	DATA 2 LINE
3	4	DATA 3 LINE
4	5	DATA 4 LINE
6	9	DATA 8 LINE
8	19 to 29 inclusive	GROUND

ATARI PORT 4 Pin No.	MX80 PRINTER Pin No.	ALSO KNOWN AS
1	6	DATA 5 LINE
2	7	DATA 6 LINE
3	8	DATA 7 LINE
4	1	STROBE
6	11	BUSY
8	19 to 29 inclusive	GROUND

Figure 4 - MX80 connection

A PRINTER CONNECTION

Most people think that these 9 pin controller ports can only be used with joysticks and paddles. Not so! For instance if you want to connect a printer, say an Epson MX80 which has a Centronics interface, this can be connected to ports 3 and 4 as shown in Figure 4. To protect the Atari, it is suggested that transistors be connected to each of the ten wires going to it. All you have to do is connect the base to Atari, collector to ground and emitter to MX80 using PNP transistors 2N2907A. I know that there are more than 10 wires but you do not have to protect the ground wires. Figure 5 shows the transistor for those of you who do not know their emitter from their elbow.

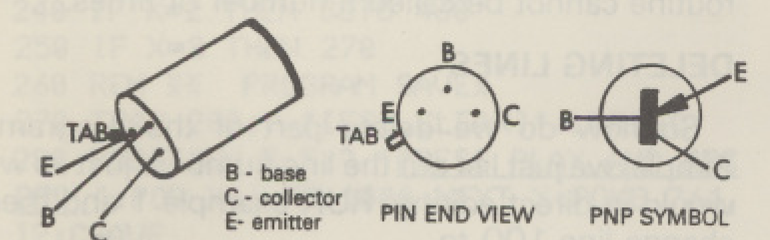


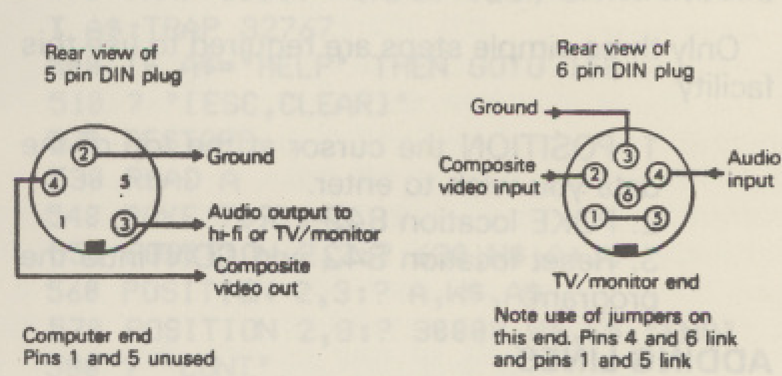
Figure 5 - Lead identification

For ease of construction a Veroboard is suggested and with the tracks cut in the right place this gives a fairly neat layout but a printed circuit is to be preferred. Again actual construction space is left to the individual due to lack of space in this column.

Finally the bad news! You will have to write your own software to drive the printer or it will just sit there and do nothing. With all you software experts out there, it should not prove too difficult and when you have written a suitable program please let PAGE 6 know about it.

A BETTER PICTURE?

It seems that some people may have a colour TV which does not give an entirely correct colour as produced by the Atari. If you are happy with the normal TV picture but not with the colour produced by the computer make sure firstly that the channel used by the computer is properly fine-tuned. If you are still not happy then you may adjust R309 on the Atari - the 'colour adjustment potentiometer'. The trick is finding it! This control is accessible by removing the top plastic cover of the machine revealing the large metal diecast cover into which the RAMs/ROMs are plugged. Looking at the computer from the back, i.e. with the keyboard away from you, there is a small hole at the upper right hand side on the rear of the diecast block. You can access R309 with a small insulated screwdriver through this hole. As the control is pre-set by the factory it should be O.K. with most TV's so if you are already getting a good picture do not fiddle, you will only make things worse. If your picture is bad, what can you lose? Please remember though to adjust the TV first before suspecting the computer.



If you are fortunate enough to have one of those TV sets with a 6 pin video socket, you can connect the Atari 800 directly to this instead of the aerial socket and get monitor quality.

If you have genuine monitor, you can also use this system and you can also have hi-fi sound!

Next issue - a look inside a cartridge and a look inside your 800.

Programming

Return Key Mode ....

article: Les Ellingham

Would you believe that a home computer could write its own programs or automatically add to a program you have written? Ask any other computer owner if this is possible and they will probably tell you it is not, but you bought the best and one of the many unique features of the Atari is what is termed the 'Return Key Mode' or 'Forced Read Mode'. This facility allows you to write a program that can automatically add to itself or delete parts of the original program.

John Poynter's program accompanying this article shows a practical demonstration of this feature by providing a Data file that will automatically extend itself as more data is input, but before looking at the program let's see what this 'Return Key Mode' is.

Only one memory location is involved and we must POKE this to achieve the desired result. The location is 842 which is part of the Input/Output Control Block (IOCB) zero which is normally used for the screen editor. The content of this location is usually 12 which will cause input to be read from the keyboard and written to the screen. If however we POKE this location with 13 the IOCB will then read from the screen and will treat the screen as an input device just the same as the keyboard. What happens in effect is that the computer automatically 'presses' the RETURN key for you and enters all the information displayed on the screen.

Only three simple steps are required to use this facility

1. POSITION the cursor at the top of the data you wish to enter.
2. POKE location 842,13.
3. Reset location 842 and CONTinue the program.

ADDING LINES

Let's look first at Example 1 to see how simple it is to use the Return Key Mode. Type in the program, LIST it out and then RUN it. Amazing isn't it? Line 10 simply clears the screen and line 100 prints out the lines you are going to enter - note the POSITION statement which we will come to later. Line 110 prints CONT at the bottom of the screen so that when the Return Key Mode is activated, it will execute this command and continue the program. Line 120 positions the cursor at the top of the screen ready for the Return Key Mode which is activated by the POKE in line 130. Line 130 also STOPs the program which is essential for the Return Key Mode to operate. Line 140 resets location 842 to accept normal input from the keyboard and line 150 is a simple delay loop before line 160 clears the screen and LISTs out your revised program.

```
10 ? CHR$(125)
100 POSITION 2,4:FOR I=20 TO 90 STEP 1
0:? I;" REM NEW LINES HERE":NEXT I
110 POSITION 2,22:? "CONT"
120 POSITION 2,0
130 POKE 842,13:STOP
140 POKE 842,12
150 FOR W=1 TO 200:NEXT W
160 ? CHR$(125):LIST
```

The routine is short and simple but there are one or two ground rules which must be followed. The cursor must be placed above the lines you wish to enter but you must also allow sufficient space for the message STOPPED AT LINE xxx which will be printed after the STOP command. If for instance your lines were printed at position 2,0, the STOPPED message would overwrite them giving an error. This is why line 100 commences with POSITION 2,4. Secondly the CONT command must follow the lines you wish to enter but does not need to follow immediately. I have placed the CONT command near the bottom of the screen to allow a varied number of lines to be inserted. There is a limit to the number of lines which can be entered at one time as they must appear on the screen between the STOP message and the CONT command but of course there is no reason why the routine cannot be called a number of times.

DELETING LINES

So how do we delete part of the program? Simple, we just list out the line numbers just as we would in direct editing. RUN example 1 and then change line 100 to

```
100 POSITION 2,4:FOR I=20 TO 90 STEP 1
0:? I:NEXT I
```

RUN it again and your newly added lines are gone.

THE SECRET METHOD

One drawback of the example given is that you can see the lines being listed out and it looks untidy and will look rather strange in the middle of a program. The simple way to disguise this is to set the colour of the text to the same colour as the

....program by John Poynter

background prior to executing the program. Add lines 95 and 155 and RUN it again.

```
95 SETCOLOR 1,9,4

155 SETCOLOR 1,9,10
```

There. If you did not know how it worked, you would probably think nothing had happened but it has and you have learned a very powerful new programming tool.

Now take a look at John Poynter's Data File program. The program is a simple record-keeping file that can be used for all manner of records from addresses to recipes to collections. The only options are to enter or read data or save the program. You cannot delete or edit entries but it achieves what it set out to do which was to find a way to accept Data input without breaking into the program. There are several additions which could be made - why not try them? How about a routine to delete entries, or a way to accept commas in data entry or to format the screen so that only one record at a time is shown to prevent the scrolling.

You have the basic framework and the Return Key Mode allows you to develop some very sophisticated and powerful Data Files. If you come up with any improvements to the program, send them in for others to share.

```
100 REM ***************************
110 REM **  read and write file    *
120 REM **   by j poynter:1983     *
130 REM ***************************
135 REM
140 DIM A$(50),B$(140),E$(3),NAME$(20)
,W$(4),X(9):W$="DATA"
150 GRAPHICS 0:POKE 710,48
160 POSITION 12,5:? " HOME FILE "
170 ? "-------------------------------
-----"
180 POSITION 10,8:? " 1..READ DATA "
190 POSITION 10,10:? " 2..INPUT DATA"
200 POSITION 10,12:? " 3 TO SAVE PROGR
AM "
210 TRAP 210:POSITION 10,14:INPUT X:TR
AP 32767
220 IF X<>1 AND X<>2 AND X<>3 THEN 210
230 IF X=1 THEN GOTO 310
240 IF X=2 THEN GOTO 460
250 IF X=3 THEN 270
260 REM **  PROGRAM SAVE*
270 TRAP 280:? "[ESC,CLEAR]":LPRINT
280 POSITION 5,5:? "PRESS PLAY AND REC
ORD ":FOR X=1 TO 2000:NEXT X:POKE 764,
12:CSAVE
290 POSITION 5,5:? "  PROGRAM SAVED...
....":FOR X=1 TO 800:NEXT X:GOTO 150
300 REM DATA SEARCH...............
310 ? "[ESC,CLEAR]":GRAPHICS 0:POKE 71
0,128:? " FILE READ "
320 ? " TYPE HELP TO RETURN TO MENU "
330 ? "-------------------------------
------"
340 ? "NAME .... OR FIRST LETTER OF NA
ME":INPUT NAME$:TRAP 32767
350 LET L=LEN(NAME$)
360 C=0
370 RESTORE
380 READ B$
390 IF NAME$=B$ THEN ? B$:GOTO 320
400 TRAP 420:IF NAME$(1,L)=B$(1,L) THE
N C=C+1:? B$
410 IF NAME$="HELP" THEN GOTO 150
420 IF B$="END" AND C=0 THEN ? "DATA N
OT FOUND FOR ";NAME$
430 IF B$="END" THEN GOTO 330
440 GOTO 380
450 ? "[ESC,CLEAR]"
460 GRAPHICS 0
470 REM *** DATA WRITING **
480 ? "[ESC,CLEAR]":POKE 710,148:? " _
TYPE HELP TO RETURN TO MENU.."
485 ? "           do not use commas "
490 TRAP 500:? "INPUT YOUR DATA ":INPU
T A$:TRAP 32767
500 IF A$="HELP" THEN GOTO 150
510 ? "[ESC,CLEAR]"
520 RESTORE
530 READ A
540 POKE 709,148
550 POSITION 2,2:? 630,W$,A+10
560 POSITION 2,3:? A,W$,A$
570 POSITION 2,8:? 30000,W$,E$,"END"
580 ? "CONT"
590 POSITION 0,0:POKE 842,13:STOP
600 POKE 842,12:POKE 709,202
610 GOTO 480
620 REM LINE 630 HOLDS NEXT DATA LINE
         NUMBER***********************
630 DATA 690
635 REM *** FILES ***
670 DATA FRED SMITH 18 TOWN ROAD CHEST
ER
680 DATA JOHN BROWN 27 THE AVENUE BROO
KSIDE
30000 DATA END
```

■

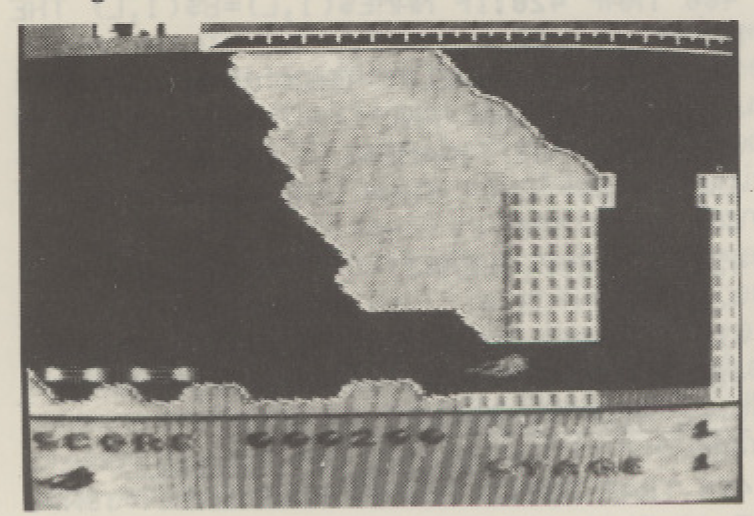
Review

WARLOCK

Calisto Software

1 PLAYER **32K/48K**

What can I say? After having a pre-release copy of this superb game for over a month now, I can say without hesitation that Warlock is the best game to have been released by a British software house. What is more it has been written by a British programmer. The chap involved is Dave Thomas, a southern lad, who has proved once and for all that it is possible to write games that are up to, if not better than, SYNAPSE standard. I understand that Dave wrote the game during two and a half months last summer and he has shown us that it can be done. Take a note of the name for you will surely be hearing a lot of it in the future.

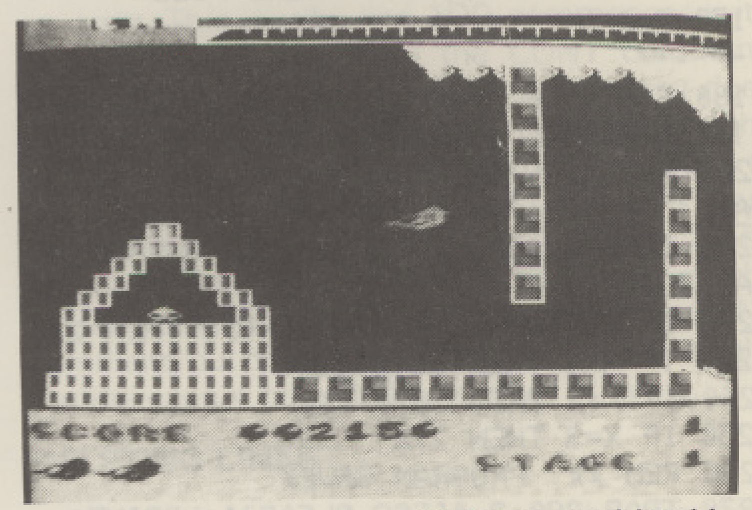


from here.....

The object of the game is 'simple'. You must reach and rescue a small pod shaped craft called a DRONE and get back to the point at which you started. Sounds simple but in fact this is one of the most challenging arcade scrolling games that I have come across.

The game consists of four options, five skill levels and four different landscapes. The ship is the best I have seen in a game of this sort and joystick response is extremely good. You start the game with 3 ships and no bonus ones are awarded. To pause the game action, the player may press SELECT during play. Rapid fire is possible by holding the trigger down and, believe me, it is needed! As you increase the skill level from 1 to 5, your energy is used up faster.

On pressing START, the screen depicts your craft descending from the great beyond onto a landing pad which then descends into the ground where your energy is boosted to full capacity. The scrolling landscape is from left to right and to reach your objective, you must negotiate pods rising from the floor - they cannot be destroyed - mines suspended from the roof of the cavern, laser barriers, the conventional 'blocks of flats' and various tricky passages. All in all very difficult to steer your craft from beginning to end. Once you have rescued the DRONE, you must reverse the process to return to the start.



to here....and back!

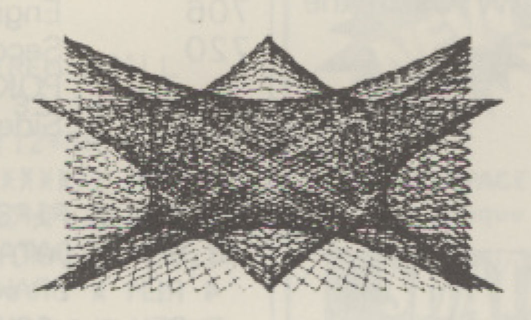
When you reach the pad where you started your mission, the next stage is automatically loaded from disk but on the cassette version a password is given to enable the next cavern to be loaded. The going gets tougher as you progress and I can honestly say that I have only managed to get to the DRONE on the second stage. With the review copy however was a version with no collision detection, so I have seen what is to come on levels 3 and 4 and, believe me, it is going to be a long time before ANYONE completes this one!

Scrolling is very smooth indeed and Dave makes good use of the Atari's superb graphics to achieve THE best game available for £14.95. I can recommend this game without hesitation.

Reviewed by

Steve Gould

DEMO 21 continued from page 18



```
1630 REM
1640 COLOR 15:M1=75:X=X1:Y=Y1:S=10:S1=
20:Z=0:POKE 712,16:B=0
1650 FOR M=70 TO 10 STEP -10:Z=Z+20:FO
R D=0 TO 360*2 STEP 10:A=(SIN(D)*M+M-1
5)+Z:B=B+1
1660 PLOT B,191:DRAWTO B,A:NEXT D:B=0:
C=C-2:IF C<1 THEN C=15
1670 COLOR C:NEXT M:D=0
1700 COLOR 1:M=10:Z=140:K=0.75
1710 D=D+10:A=(SIN(D)*M+M-15)+Z:B=B+1:
C=C+K:IF C>15 THEN 1730
1720 COLOR C:PLOT B,191:DRAWTO B,A:IF
D<720 THEN 1710
1730 C=C-K:COLOR C:PLOT B,191:DRAWTO B
,A:IF C<1 THEN 1710
1740 D=D+10:A=(SIN(D)*M+M-15)+Z:B=B+1:
C=C-K:IF C<1 THEN 1710
1750 COLOR C:PLOT B,191:DRAWTO B,A:IF
D<720 THEN 1740
1760 GOSUB 5000
1770 REM ********** C21 *************
1780 DEG :X1=39:Y1=95:REM 192*80 RES.
1790 GRAPHICS 10:COLOR 15:M1=75:X=X1:Y
=Y1:S=10:S1=45
1800 FOR N=5 TO 12:POKE 700+N,(N*16)+8
:NEXT N:POKE 704,0:N=0
1810 COLOR 1:FOR M=0 TO 38 STEP 1:M1=M
*2:X=SIN(1)*M+X1:Y=COS(1)*M1+Y1
1820 FOR D=0 TO 360 STEP S1:A=SIN(D)*M
+X1:B=COS(D)*M1+Y1:PLOT A,B:DRAWTO X,Y
:X=A:Y=B:N=N+1:NEXT D
1830 C=C+1:IF C>8 THEN C=1
1840 COLOR C:NEXT M
1870 S1=20:FOR N=5 TO 12:POKE 700+N,(N
*16)+8:NEXT N:POKE 704,0
1880 COLOR 1:FOR M=0 TO 20 STEP 1:X=SI
N(190)*M+X1:Y=COS(190)*M1+Y1
1890 FOR D=190 TO 360 STEP S1:A=SIN(D)
*M+X1:B=COS(D)*M1+Y1:PLOT A,B:DRAWTO X
,Y:X=A:Y=B:NEXT D
1900 C=C+1:IF C>8 THEN C=1
1910 COLOR C:NEXT M
1930 COLOR 1:FOR M=20 TO 1 STEP -1:X=S
IN(1)*M+X1:Y=COS(1)*M1+Y1:FOR D=0 TO 1
90 STEP S1:A=SIN(D)*M+X1:B=COS(D)*M1+Y
1
1940 PLOT A,B:DRAWTO X,Y:X=A:Y=B:NEXT
D
1950 C=C+1:IF C>8 THEN C=1
1960 COLOR C:NEXT M
1970 Q=PEEK(705):FOR P=5 TO 11:POKE 70
0+P,PEEK(701+P):NEXT P:POKE 712,Q:POKE
 77,0:GOTO 1970
1980 REM ***************************
1990 REM *  TYPE GOTO 2020          *
2000 REM *  TO VIEW AGAIN AFTER ONE *
2010 REM *  PROGRAM RUN             *
2020 GRAPHICS 10+16+32
2030 FOR N=5 TO 12:POKE 700+N,0:NEXT N
:POKE 704,0:POKE 705,16+8
2040 P=PEEK(705):FOR N=5 TO 11:POKE 70
0+N,PEEK(701+N):NEXT N:POKE 712,P
2050 FOR W=0 TO 10:NEXT W:POKE 77,0:GO
TO 2040
5000 FOR N=0 TO 1000:NEXT N:POKE 77,0:
RETURN
32000 REM ***** BUILD ARRAY *****
32005 GRAPHICS 0:DEG :DIM X(360),Y(360
):POKE 752,1
32007 IF X(359)=SIN(359) THEN RETURN
32010 POSITION 2,1:? "BUILDING ARRAY..
.."
32020 FOR N=0 TO 360:X(N)=SIN(N):Y(N)=
COS(N):POSITION 21,1:? "X(";N;")";" ";
"Y(";N;")";:NEXT N:RETURN
```
■

Graphics Programming

FIRE ENGINE using XIO FILL

by Vic Pushon

As graphics has been my main interest, I thought that it was time I submitted a program to PAGE 6 and at the same time pass on some information and ideas to you.

This program is basically a GRAPHICS 10, XIO FILL demonstration, using DATA with over plotting for details making use of the 9 colours and variable luminence available in this mode. The program is complete with flashing lights and sound!

The FILL command is XIO 18,#6,0,0,'S:' and 765 must be POKEd with the colour register of the fill. The Atari XIO FILL is limited as you cannot use it with multi co-ordinate designs, only 3 or 4 points at a time being allowed and you must take care not to enter into or overlap a previously filled area. It can be emulated in a simple form using a loop as I have done for the headlights and grill as PLOT and DRAWTO are permitted over an XIO FILL.

Figure 1 shows various ways of using a fill. The 4 points must be defined moving anti-clockwise in direction. It will work with 3 points, i.e. with only one DRAWTO but in our program this would upset the DATA lines. If you wish to have only 3 points give the same value to both DRAWTOs in the DATA line.

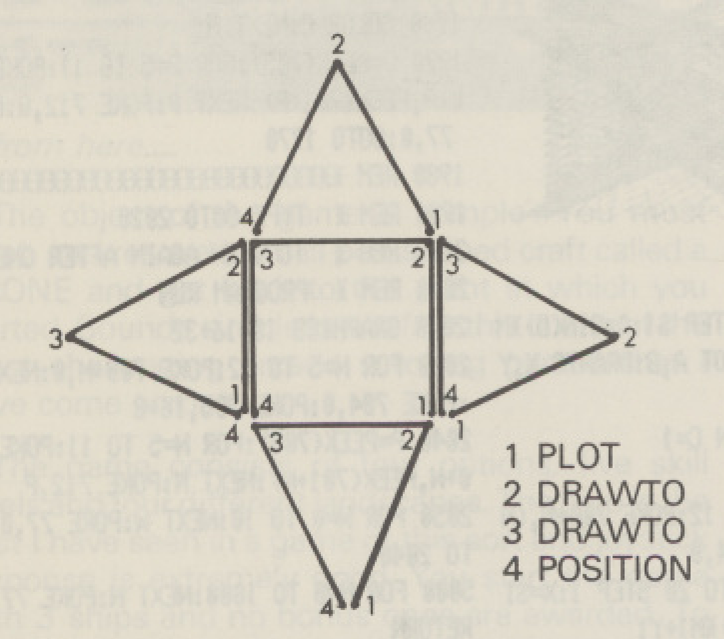


Figure 1 - Various ways of using XIO FILL. Note that a 3 point FILL will work with only one DRAWTO but do not let the PLOT point (1) and the POSITION (4) have the same value.

Vic Pushon is a Dental Technician and Atari computer enthusiast. He produces the Victagraph Plot Window - an inexpensive and easy to use graphics aid for the Atari.

Each DATA line contains the following information to complete one FILL with all information in the required sequence - Colour number to POKE into register, PLOT X,Y (first point), DRAWTO X,Y, DRAWTO X,Y, POSITION X,Y, ROGUE VALUE END OF DATA detection.

This started out as a simple fill but I kept adding to it, hence the uneven line numbers.

The program:-

10-29	POKE COL. registers with colour/brightness values
30-100	This section READs all the DATA in a line to complete one FILL
500	All DATA
585	Final DATA line, you must have 9 values plus the -4 to detect the end of all DATA
600-615	LOOP for headlights
625-640	LOOP for the grill
650-670	PLOT and DRAW LINES
680-690	Front window pillars
700	First SOUND LOOP with POKE to COL. REGISTER to vary brightness
706	Engine sound
720	Second SOUND LOOP with POKE (as 700)
730	Side flashers

```
1 REM ********************************
2 REM * FIRE ENGINE IN GR.10  USING *
3 REM * DATA FOR XIO FILL, PLOT AND *
4 REM * DRAWTO OVER FILL USING LOOPS*
5 REM *  SOUND AND FLASHING LIGHTS  *
6 REM *    VICTAGRAPH PLOT WINDOW   *
7 REM *         VICTOR PUSHON       *
8 REM ********************************
10 GRAPHICS 10
15 POKE 704,212:REM GREEN.B GROUND
20 POKE 705,52:REM RED     COL.1
21 POKE 706,2:REM GRAY   ..COL.2
22 POKE 707,96:REM BLUE  ..COL.3
23 POKE 708,14:REM WHITE ..COL.4
24 POKE 709,224:REM ORANGE COL.5
25 POKE 710,112:REM BLUE...COL.6
28 POKE 711,22:REM BROWN   COL.7
29 POKE 712,0:REM BLACK  ..COL.8
30 REM **** READ DATA FOR XIO FILL ***
35 READ COL,PLX,PLY,DRX1,DRY1,DRX2,DRY
2,POSX,POSY,END
40 COLOR COL:REM DRAW WITH FILL COL.
50 IF END<>-9 THEN GOTO 590:REM DETECT
   END OF DATA LIST
```

```
60 PLOT PLX,PLY:DRAWTO DRX1,DRY1:DRAWT
O DRX2,DRY2
70 POSITION POSX,POSY:REM 4TH POINT
   MOVING ANTI-CLOCKWISE
80 POKE 765,COL:REM FILL COL.  FROM
   FIRST DATA NUMBER
90 XIO 18,#6,0,0,"S:"
100 GOTO 35
110 REM DATA AREA  DATA AREA DATA AREA
500 DATA 1,55,35,54,29,26,29,25,35,-9
510 DATA 1,55,49,55,36,25,36,25,49,-9
520 DATA 2,55,88,55,50,25,50,25,88,-9
530 DATA 1,56,97,55,89,25,89,24,97,-9
540 DATA 1,56,145,56,98,24,98,24,145,-
9
550 DATA 1,53,156,55,146,24,146,27,156
,-9
560 DATA 8,53,185,53,157,48,157,48,185
,-9
570 DATA 8,32,185,32,157,27,157,27,185
,-9
575 DATA 6,48,28,48,16,46,16,46,28,-9
577 DATA 3,33,28,33,16,31,16,31,28,-9
580 DATA 7,79,190,79,185,0,185,0,190,-
9
585 DATA 0,0,0,0,0,0,0,0,0,-4
590 COLOR 4:REM H.LIGHTS  PLOT,DRAW
         OVER XIO FILL
600 FOR HL=1 TO 11
605 PLOT 26,117+HL:DRAWTO 30,117+HL
610 PLOT 50,117+HL:DRAWTO 54,117+HL
615 NEXT HL
620 COLOR 8
625 FOR GR=1 TO 30 STEP 5:REM GRILL
630 PLOT 32,112+GR:DRAWTO 32,107+GR:DR
AWTO 48,107+GR:DRAWTO 48,112+GR
640 NEXT GR
650 PLOT 25,37:DRAWTO 55,37:PLOT 24,98
:DRAWTO 56,98:PLOT 24,145:DRAWTO 56,14
5
670 COLOR 5:PLOT 56,127:DRAWTO 56,117:
PLOT 24,127:DRAWTO 24,117
680 COLOR 1:PLOT 25,87:DRAWTO 25,49
685 PLOT 40,87:DRAWTO 40,49
690 PLOT 55,87:DRAWTO 55,49
695 REM **** SOUND LOOP ONE ****
700 FOR SIR=1 TO 10
702 POKE 707,SIR+96:REM LOOP COLOUR
   BRIGHTNESS IN  REGISTER
705 SOUND 0,53,10,14
706 SOUND 3,200,12,12
710 NEXT SIR:SOUND 0,0,0,0
715 REM **** SOUND LOOP TWO ****
720 FOR SER=1 TO 10
722 POKE 710,SER+112:REM LOOP COLOUR
BRIGHTNESS IN REGISTER
725 SOUND 1,47,10,14
730 POKE 709,SER+240:REM LOOP COLOUR
780 NEXT SER:SOUND 1,0,0,0:GOTO 700
810 REM END  END  END  END  END  END
```

THE SOFTWARE REVIEWS

Program	Manufacturer	Memory	Players	Price
TAROT CARD	English Software Co	16/48K	Any	£12.95
AIRSTRIKE 2	English Software Co	16/32K	1/2	£9.95
HYPERBLAST	English Software Co	32K	1/2	£9.95
JET BOOT JACK	English Software Co	32K	1/2	£9.95
CAPTAIN STICKY'S GOLD	English Software Co	16/32K	1/2	£9.95
BOMBASTIC	English Software Co	16K	1/2	£9.95
BATTY BUILDERS	English Software Co	16K	1	£9.95
CAVERUNNER	English Software Co	32K	1	£9.95
SHATABLAST	L.B.D. Ltd.	16K	1	£8.95
GIANT SLALOM	Artworx	16K	2/9	£7.50
SPACE TRAP	Artworx	16K	1	£7.50
CRAZITACK	Artworx	16K	1	£7.50
GEOGRAQUIZ - U.K.	Soflow Software	16K	1/2	£6.50
GEOGRAQUIZ - U.S.A.	Soflow Software	16K	1/2	£6.50
LEGGITT	Imagine	16K	1/2	£5.50

The Software Reviews take on a different format this issue to bring you reviews of fifteen new programs all but one of which can be purchased for less than £10. Read on to see if you can after all get good value at low prices for your Atari.

Top of the list for Atari software is English Software Co who have eight recently released titles. **TAROT CARD** should not strictly be included being priced at £12.95 but this does include a book on the Tarot. Not just a few flimsy pages but a genuine Penguin paperback. Tarot Card begins with a neat opening sequence before showing you three cards from which you must choose the one with which you feel most affinity. You are then invited to ask a question that you want the Tarot to answer and the cards are dealt and your reading is given. As each card is dealt, its characteristics are revealed and at the end of the reading your question is repeated with the Tarot's conclusion. There are two versions on the tape, 16K and 48K with fewer cards in the 16K version which would not please those with a serious interest in the Tarot! Certainly a very different and interesting program and great fun. At least it answered my question in the way I wanted! **AIRSTRIKE 2** is just what it says, a follow up to one of the most successful Atari titles. The format is the same although there are naturally many improvements. This one is easier to play than the original which in my opinion is a vast improvement as AIRSTRIKE verged on the impossible for mere mortals! The familiar scrolling cavern is there but there are now options to enter caverns below the main one thus allowing several different ways through. Bomb control is now by joystick, although you may still choose the spacebar as an alternative, but it is fairly difficult to get used to. You must push the joystick up at the same time as pressing the fire button which if you are not careful will see you crashing into the roof. There are five skill levels and again 16K and 32K versions on one tape. The 32K version has a radar scanner similar to Defender to show you where you are in the cavern. One super innovation from English Software is the provision of new landscapes to load into the game if you become tired of the original. For only £4.95 you may purchase a data cassette which allows you to load in two new landscapes. The disk version costs £6.95 and has four new landscapes. A great idea. **HYPERBLAST** is in the Galaxians vein and looks good as the aliens burst upon your screen. There is a scrolling starfield and ten waves of flying diving creatures to destroy before the next set of creatures with different movement patterns appears. These creatures are not in the familiar formation but dance and flit all around the screen. Your ship is moved along the bottom of the screen and you have a centre cannon and two wing missiles with which to shoot. As you hit a creature it releases a flurry of bombs which increase in number as the game goes on and you must avoid these. There are three difficulty levels which will provide you with plenty of challenge. **JET BOOT JACK** is probably the pick of the bunch. It is a multi screen jumping game with lifts and conveyors and nasty bugs and gremlins. The theme is quite original and features Jet Boot Jack as a space age



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Reviewed by Les Ellingham

jogger (complete with Sony Walkman!) zipping around a record pressing plant collecting stray musical notes. No ordinary jogger is Jack for his boots are rocket propelled and he must refuel as he goes. Death comes to Jack in many guises from falling into open shafts, cracking his head on projections from the ceiling, getting crushed by a moving platform, eaten by a nastie or just running out of fuel. There are ten different screens with the option to jump ahead only after you have completed that screen. Although on a now familiar theme the unique story line and good programming makes Jet Boot Jack well worth getting. The music is good and the scrolled opening credits are superb. **CAPTAIN STICKY'S GOLD** comes next and has some really superb title music. The game however did not seem quite up to the excitement of the opening credits and music although it is still quite playable. The action takes place underwater and you have to lower Captain Sticky on a rope to retrieve gold bars from the ocean bed. As well as watching your air supply you must keep an eye on the creatures of the deep which you can fight off with your harpoon gun. Each dive is timed and you must resurface for fresh air or suffer a watery death. Points are scored by harpooning shoals of fish as well as recovering gold and there are eight levels to complete before moving on to the next of eight zones. Somehow this one did not seem as exciting as the others but the theme is certainly different and you may enjoy it just for that. It is worth getting for the music which, as I have said, is really great. **BOMBASTIC** is a throw back to the early days of Breakout and Pong and is basically a two player game, although one can play against the computer. The object is to shoot at floating blocks to prevent them from reaching your side of the screen. The blocks are harmless until they start flashing when they will destroy part of your defensive wall. The idea is to push them towards your opponent's wall just before they begin to flash so that they can do their damage there. The simple themes often make the best games and Bombastic is, despite its simplicity, very addictive requiring both strategy and quick action. An ideal game for two players and a refreshing change from the search for ever more involved themes. **BATTY BUILDERS** seems at first to be too simple requiring you to just catch falling bricks and then throw them back up to build a wall. The first level is fairly easy, although you must think carefully to gain maximum points, but thereafter it becomes very hard as you have to dodge fast moving obstacles whilst at the same time trying to catch the bricks. The brick supply scrolls across the top of the screen in beautifully smooth motion and the bricks drop at random. Once caught you can move to a chosen position to throw them up. Catch them carefully though for death in this one is literally shattering and still gives me quite a fright each time I play! And so we come to **CAVERUNNER**. They can't all be good can they! After all the above Caverunner is a disappointment being extremely frustrating to play and a little slow with the monotous death march being tolled out in a single sound voice every few seconds as you die. This is the only one of the English Software releases that requires Basic to load and it shows in comparison to the rest. The object is to run through various caves avoiding green slime, water and various obstacles to reach hidden treasures. Each screen requires you to run from side to side descending a level at a time. I must confess that I never got past the first screen and gave up very quickly. Maybe this one requires a great deal of patience or maybe it was just that the others were so good making a fair judgement difficult.

SHATABLAST is from a newcomer to Atari software L.B.D. Ltd and there are one or two rough edges such as the attract mode not being disabled which shows that this is a first release for the Atari. At first sight the graphics look disappointing being a stationary view from the turret of a defence ship to outer space but the game comes alive as you play it. You must defend your planet from a guided missile attack from an enemy Battle Star which launches fast and furious salvos at you. You have a cross sight and must line this up on the incoming missiles to shoot them down whilst at the same time avoiding your own orbiting satellites. The trajectory of the missile homing in on you is excellent and this is the part that makes the game quite a challenge. Forget the somewhat blocky graphics and simple titles and concentrate instead on those homing missiles which will give you a good run for your money.

Allrian Data Services' FIRST GAME SERIES is a re-release of early titles for the Atari which in their time were 'state of the art' games but which have now been overtaken by the many games available in machine language. At £7.50 each the series is among the cheapest available for the Atari and they have been re-released to give you more games for your collection without emptying your pocket. **SPACE TRAP** has your small craft inside a black hole where you must shoot as many enemy craft as possible before the hole closes in on you. Hitting the walls or an enemy craft will lose you points and you may run out of fuel. There is no end objective, just get the highest score possible. **CRAZITACK**

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☆ 1st Readers Poll ☆

RESULTS

Many thanks to all of you who voted in the Readers' Poll for the best articles or programs published in our first year. It was very pleasing to see that every major article or program was voted for by somebody and every contributor can feel proud that his work was appreciated by some of our readers. In all 44 different articles or programs received votes which goes to show what diverse interests there are among Atari owners.

So who won? The most popular program by far was **GRAB AN APPLE** by Garry Francis and Jamie Athas followed in second place by **TINY TEXT** by Stan Ockers and Jim Carr with **FOUR IN A ROW** by Mike Aston a close third. A complete set of Channel 8 Adventures **valued at £100** is now winging its way across the world to Garry Francis and Jamie Athas and other prizes have been awarded to the runners up.

Among the many articles you would like to see featured in the magazine are telecommunications, hardware, business software, machine language tutorials, display lists, scrolling, more utilities, player missile graphics and many more. Some of these such as hardware and player missile graphics are featured in this issue but we need YOU to write articles and programs on the other subjects or on any subject that you think might interest other users. Why don't you try for the PAGE 6 AWARDS in 1984? Your article or program could be worth up to £100!

Many thanks to **STARCADE** who kindly donated prizes of Up, Up & Away and Savage Pond to the runners up.

sees lots of player-missile creatures hovering about for you to shoot in order to defend the city. You have banks of missiles which are used up as fired so you must plan your shots carefully. When all banks are exhausted you move on to the next screen which is nearer the city. If you fail then an alien craft levitates the city and drops it in a heap of rubble. **GIANT SLALOM** is the best of the three games reviewed and is one of the few games which can be played by a whole bunch of people. COMPUTE! recently published a Skiing game which used true fine scrolling but Giant Slalom, despite its simple use of graphics characters, is much better to play. Just a downhill slalom course with different gates for you to negotiate and improve upon your time. This one again proves that the simple ideas are among the most playable. Also in the series are INTRUDER ALERT and RINGS OF THE EMPIRE. At the very least these games will give you an insight into what you can achieve using Basic and will probably give you a bit of fun into the bargain. Hardened old Atari hands won't like these but they do give the youngsters and beginners the opportunity to purchase some low priced software.

It is perhaps a little unfair to include educational software in a long review of this nature but Soflow Software are one company that are dedicated to bringing you Atari software at a price you can easily afford. Educational software by its very nature is not spectacular and indeed many readers would doubt its worth if it were so. Soflow's **TARITEACH GEOGRAQUIZ** series are guessing games which require you to identify places in various countries of the world. The first two in the series are **UNITED KINGDOM** and **U.S.A.** The first presents you with a map of Great Britain and flashes a location which you must identify from a choice of four locations given. The choices are well worked out so that they remain challenging whilst not being confusing and the correct answer is given if you are wrong. There are one or two player options and playing against someone else certainly gives an edge to the game. In a program of this nature which has deliberately been kept to 16K it is inevitable that some questions will repeat but the number of repeats has been cleverly kept to a minimum. The U.S.A. program is similar except that you have to guess States instead of places. There is no doubt that this series will teach you about the countries they feature as well as providing good family entertainment. If you are a parent who cannot understand (or can't play!) the arcade games, the Geograquiz series will allow you to join in with your children and both you and they will learn something new. One of the many reasons for buying a computer is 'for education' but there has been a dearth of educational material for the Atari. Soflow Software have made a good start in filling this void.

Finally **LEGGIT** from Imagine is the cheapest of all and is a conversion of the best selling Spectrum game Jumping Jack in which you have to move 'Leaping Lenny' from the bottom of the screen to the top through a series of moving gates. As you get higher more gates appear through which you may fall back. If you reach the top of the screen new hazards are introduced such as a witch with broomstick, an aeroplane, train etc. There are one or two programming flaws which fortunately do not spoil the play and at £5.50 including postage you will get many hours of play for little outlay. Thanks to Steve Tullett who provided a full review of Leggitt from which this information is taken. Unfortunately we did not have room to print it all.

Can you get good value at under £10? It depends on your outlook. If you can afford to keep buying £30 ROMs and £35 - £50 Infocom adventures, or are a master programmer yourself, then you will probably dismiss many of these programs but if you are an ordinary Atari user who does not want his computer to lie idle then the majority of these programs will prove well worth while. ●

```
1 REM ******************************
2 REM *          MOIRE             *
3 REM *            2               *
4 REM *          from              *
5 REM *      PHIL GRIFFIN          *
6 REM ******************************
9 REM
10 FOR J=2 TO 6
20 GRAPHICS 8+16:SETCOLOR 2,0,0:COLOR
1
30 FOR I=1 TO 95 STEP J
40 PLOT 0,0:DRAWTO 159,I:PLOT 319,0:DR
AWTO 160,I:PLOT 319,191:DRAWTO 160,191
-I:PLOT 0,191:DRAWTO 159,191-I
50 NEXT I
60 FOR I=157 TO 1 STEP -J
70 PLOT 0,0:DRAWTO I,95:PLOT 319,0:DRA
WTO 319-I,95:PLOT 319,191:DRAWTO 319-I
,96:PLOT 0,191:DRAWTO I,96
80 NEXT I
90 FOR I=1 TO 500:NEXT I
100 NEXT J
110 POKE 77,0:GOTO 10
```

First Steps

Mark Hutchison, Belfast

I would firstly like to thank all of the people who wrote to me, especially those who enclosed a s.a.e. The majority of questions concerned GRAPHICS which I will not include here as it is just too big a subject. Watch out though for future developments. Let's take a mixed bag of questions that have arisen.

If you have a 16K system then memory is at a premium so why not have great graphics and sound in an intro display and have this intro load the main program? The second program will clear out the first. Save your programs using SAVE 'C:' and then use RUN 'C:' to load and RUN in one go. This type of RUN looks to see if the RETURN key has been pressed so we put 12 (RETURN key) into location 764 (last key pressed). The last line of your first program must be

POKE 764,12:RUN'C:'

You may find that any number less than 255, i.e any key pressed, will do but better safe than sorry.

Why use LET when S 100 does just as well? When writing a program you should use REMs normally on lines that end in 9 and name your subroutines, for instance, GOSUB SOUND. Using SOUND 100 however will bring up an error as SOUND is a command. The answer is LET SOUND 100. Probably S 100 was used first and LET was added to allow commands to be used as variables. If so, then a good afterthought Messrs. Wilkinson and Co.

PEEK and POKE still cause a bit of trouble. What does POKE 106,PEEK(106)-8 mean? 106 is the location that tells you the top of memory in pages (a page is 256 bytes).P PEEK(106) tells us how many pages are available. P-8 means we wish to reserve 8 pages for our use. Now we put this new figure into 106 so that the computer knows not to go higher, POKE 106,P-8. As you can see this has taken two commands whereas POKE 106, PEEK(106)-8 is only one - a memory saver.

A POINTER is a location that holds the address of another location usually in ROM which you cannot amend. Every time the computer wants to change your keystroke into a character it will go to 756 and normally find 224. Now, 224*256=53744 (Why? Surely you have read that excellent article Memories..!!) which is where the character set resides in ROM. If you save a bit of memory by lowering RAMTOP as explained above, and change 756 by POKE 756,PEEK(106) then the computer will be directed to the new address and retrieve your very own character set if you have stored it there. A bit like changing a road sign. Note that a GRAPHICS call will reset this POINTER.

Did you know that the whole of the Galactic Map on Star Raiders is redefined characters? The secret slipped out when I removed the cartridge from an XL.

If any readers have seen the COMMANDER 2400 keyboard advertised in American magazines, I can confirm it to be an excellent and worthwhile, albeit expensive, purchase. No matter what Jackie from Germany thinks, I will stick to my 48K 400!

I was asked by John Tolan why his variables should all suddenly appear as PMBASE. This reminded me of 'The Crypts of Terror'. When you BREAK and LIST the intro, it comes out as graphics garbage. On investigation it seems that locations 130 and 131 hold the secret. These are variable name table pointers. If you POKE a number here and list your program, strange things occur. Your program runs because it has been set up in memory but you will get errors when you amend because poor Atari cannot understand the garbage. Pretty good 'in-home' protection. Of course this is not the answer to the original question but it held my attention for hours.

Finally, Les Lawson asked me what CTRL-3 is for. This caused a problem which turned into an embarrassment. CONTROL-3 is an End-of-File marker and I could not think why it should be on a keyboard. Quite obvious if I had read my DOS manual! You can directly create a file on disk from the screen by first opening a file OPEN #1,8,0, 'D:FILEDATA' and then using DOS option C - Copy File - and E:,D:FILEDATA. Just type your data and when you have finished use CTRL-3 for the EOF marker.

Finally (really) our Editor limits my space! The time between receiving your letters and the printing of this column could involve two issues so if you want an earlier reply, please enclose a stamped addressed envelope.

Mark has answered many readers' question direct. Write to him at BAUG Software, P.O.Box 123, Belfast, N.Ireland, BT10 0DB

TYPO TABLES

The TYPO TABLES are provided to help you ensure that the listings you type in are correct. You will require the TYPO program from issue 5 which gives full details of how to use these tables.

QUICKSHOT

Variable checksum = 403100

Line num range	Code	Length
1 - 20	QM	416
25 - 125	UC	501
130 - 185	NJ	514
190 - 300	OY	601
799 - 820	EU	508
825 - 1010	TK	511
1020 - 1090	VF	458
1095 - 1200	QK	126

FIRE ENGINE

Variable checksum = 330624

Line num range	Code	Length
1 - 21	UO	422
22 - 70	YZ	435
80 - 570	QQ	434
575 - 630	TO	444
640 - 706	EU	524
710 - 810	KJ	314

DEMO 21

Variable checksum = 272607

Line num range	Code	Length
2 - 30	QO	560
40 - 130	ZM	515
140 - 240	AG	524
250 - 340	ZS	508
350 - 400	UI	504
410 - 500	JD	614
510 - 590	JD	548
595 - 690	KB	558
700 - 770	WX	547
780 - 850	ZS	511
860 - 930	FZ	515
940 - 1030	QT	538
1040 - 1120	ZE	532
1130 - 1210	ML	591
1220 - 1290	JT	569
1300 - 1410	KD	511
1420 - 1490	CN	595
1500 - 1590	MR	569
1600 - 1710	NF	544
1720 - 1810	GZ	571
1820 - 1930	TH	572
1940 - 2040	LO	525
2050 - 5000	PZ	103

WILDWEST

Variable checksum = 1077351

Line num range	Code	Length
1 - 160	RS	465
170 - 220	HB	555
230 - 310	OX	505
320 - 430	ML	505
440 - 540	RK	507
550 - 640	LY	577
650 - 705	IW	505
710 - 790	KK	578
800 - 900	KV	581
910 - 1010	LJ	544
1020 - 1120	VJ	528
1130 - 1190	BP	517
1200 - 1250	ZI	518
1260 - 1340	OV	524
1350 - 1410	OB	276

NOTE: AS LINE NUMBERS ABOVE 32000 CLASH WITH TYPO, DELETE LINES 32000 - 32020 BEFORE RUNNING TYPO. CHECK THESE LINES CAREFULLY AND THEN ADD THEM BACK TO THE CHECKED LISTING

Games

Sonar Search

Ron Smith, Cheshire

Seek...locate...destroy! Sonar Search is a submarine hunt game in the classic style of seeking targets by deduction and logic. You are presented with a grid and by using the joystick have to place a cursor in the position that you think the enemy submarine is located. You will be given a number that indicates how far from the target you are and must then deduce the exact target position. You have a limited number of depth charges and the enemy submarine pack is hunting you as well so you may be sunk.

You may change some of the variables in the program to make the game easier or more challenging as follows:

TARGETS (line 1000) - the number may be changed to make the game shorter or longer.
SUNKS (line 1000) - a higher random number or fixed number will allow you to survive longer.
DEPC (line 1040) - gives the number of depth charges available for each target.
SINK (line 2010) - if the fraction is higher you will survive longer or if lower you will sink easier.
RESCUE (line 2510) - the lower the fraction the better chance of being rescued.

Target located....target located....

```
1 REM ******************************
2 REM **      SONAR  SEARCH       **
3 REM **           BY             **
4 REM **        R.F.SMITH         **
5 REM **          1983            **
6 REM ******************************
10 GOSUB 7000:REM TITLE PAGE
20 GOTO 1000
30 FOR W=1 TO 150:NEXT W:RETURN
40 FOR W=1 TO 500:NEXT W:RETURN
50 FOR W=1 TO 200:NEXT W:RETURN
60 FOR W=1 TO 50:NEXT W:RETURN
70 POSITION POX,POY:RETURN
80 POSITION POX,POY+1:RETURN
90 POSITION POX,POY+2:RETURN
100 POSITION POX,POY+3:RETURN
110 FOR Z=0 TO 3:POSITION POX,POY+Z:?
#6;"                    ":NEXT Z:RETUR
N
120 FOR P=30 TO 200:SOUND 0,P,0,10:NEX
T P:SOUND 0,0,0,0:RETURN
200 FOR A=1 TO LEN(A$):? A$(A,A);:SOUN
D 0,65,10,6:SOUND 1,70,10,6:FOR B=1 TO
 20:NEXT B
210 SOUND 0,0,0,0:SOUND 1,0,0,0:NEXT A
:RETURN
999 REM MAIN ROUTINE
1000 TARGET=0:TARGETS=INT(RND(0)*10+5)
:HITS=0:MISS=0:SUNKS=INT(RND(0)*9+2):S
OUND 0,0,0,0:SOUND 2,0,0,0
1005 POX=0:POY=16:GRAPHICS 17:POKE 712
,101:POKE 708,170:POKE 709,120:POKE 71
0,154:POKE 711,26
1010 POSITION POX+4,POY+7:? #6;"sonar
search"
1020 FOR X=0 TO 9:POSITION 15,X+1:? #6
;X:POSITION X+5,0:? #6;X:POSITION X+5,
11:? #6;X:POSITION 4,X+1:? #6;X:NEXT X
1030 FOR X=0 TO 9:FOR Y=0 TO 9:POSITIO
N X+5,Y+1:? #6;"+":NEXT Y:NEXT X
1040 X=INT(RND(0)*10):Y=INT(RND(0)*10)
:DEPC=INT(RND(0)*5+2):X1=9:Y1=5
1050 GOSUB 110:FOR T=1 TO 3:GOSUB 90:?
 #6;"  target sounded":SOUND 0,T+60,1
0,8:GOSUB 30
1055 GOSUB 90:? #6;"                 "
:SOUND 0,T+90,10,10:GOSUB 30:NEXT T:SO
UND 0,0,0,0
1060 GOSUB 80:? #6;"  depth  charges="
;DEPC:GOSUB 100:? #6;"  hits=";HITS;"
 misses=";MISS
1070 DEPC=DEPC-1:IF DEPC=-1 THEN 2000
1080 S=STICK(0)
1085 X1=X1+(S=7)-(S=11):IF X1<5 THEN X
1=14
1086 IF X1>14 THEN X1=5
1090 Y1=Y1+(S=13)-(S=14):IF Y1<1 THEN
Y1=10
1091 IF Y1>10 THEN Y1=1
1095 X2=X1:Y2=Y1:LOCATE X2,Y2,Z1:POSIT
ION X1,Y1:? #6;"X"
1097 IF STRIG(0)=1 THEN POSITION X2,Y2
:? #6;CHR$(Z1):GOSUB 60:GOTO 1080
1099 FOR P=100 TO 200:SOUND 0,P,10,10:
NEXT P:SOUND 0,0,0,0:GOTO 1100
1100 IF X1=X+5 AND Y1=Y+1 THEN 3000
1105 SPOS=INT(ABS(X1-(X+5))+ABS(Y1-(Y+
1))):IF SPOS>9 THEN SPOS=9
1110 POSITION X1,Y1:? #6;SPOS:GOTO 106
0
1999 REM SHIP TORPEDOED
2000 GOSUB 110:GOSUB 70:? #6;"...torpe
doed..............torpedoed...":GOSU
B 120
2010 SINK=RND(0):MISS=MISS+1:IF SINK>0
.6 THEN 2500:SUNK=SUNK+1:IF SUNK=SUNKS
```

```
 THEN 2500
2020 GOSUB 90:? #6;"    MINOR DAMAGE":
GOSUB 30
2025 GOSUB 100:? #6;"TARGET POSITION "
;X;"-";Y:GOSUB 40:GOTO 4000
2499 REM SHIP SINKING
2500 GOSUB 110:FOR P=100 TO 250:SOUND
0,P,10,8:NEXT P:SOUND 0,0,0,0:GOSUB 80
:? #6;"    SHIP SINKING"
2510 GOSUB 40:GOSUB 80:? #6;"    ABAND
ON SHIP":RESCUE=RND(0):IF RESCUE>0.6 T
HEN GOSUB 40:GOTO 6500
2519 REM SHIP SUNK
2520 GOSUB 50:GRAPHICS 0:POKE 710,0:PO
KE 752,1:? :? :? :? "            SONAR
 SEARCH":? :? :?
2530 ? "       ";HITS;" SUNK   ";MIS
S;" ESCAPED.":? :? "        PACK NUMBE
RED ";TARGETS
2540 ? :? :? "        YOUR SCORE IS ZE
RO!":GOSUB 40:? :? "      BECAUSE YOUR 
SHIP WAS LOST"
2545 ? :? :? :? "         ANOTHER GAME(
Y/N)"
2550 GET #1,A:IF A=89 THEN 1000
2560 IF A<>89 THEN ? CHR$(125):? :? "T
HANKS FOR PLAYING SONAR SEARCH.":GOSUB
 50:? "BETTER LUCK NEXT TIME!"
2570 GOSUB 40:GRAPHICS 0:END
2999 REM SUBMARINE DESTROYED
3000 GOSUB 110:GOSUB 120:GOSUB 120:GOS
UB 80
3010 ? #6;" S U B M A R I N E":GOSUB 9
0:? #6;"  D E S T R O Y E D":GOSUB 50:
HITS=HITS+1:GOTO 4000
3999 REM CHECK IF END OF GAME
4000 TARGET=TARGET+1:IF TARGET=TARGETS
 THEN 6000
4010 GOSUB 50:GOSUB 110:FOR T=1 TO 3:G
OSUB 90:? #6;"   CONTINUE SEARCH  ":GO
SUB 30:NEXT T:GOTO 1020
5999 REM GAME OVER
6000 GRAPHICS 0:POKE 710,0:POKE 752,1:
? :? "          SONAR SEARCH":? :? :
? "        WELL DONE!"
6010 ? :? "          ";HITS;" DESTRO
YED":? "          ";TARGETS;" IN PAC
K"
6020 SCORE=HITS:IF SCORE>HISCORE THEN 
HISCORE=SCORE
6030 ? :? :? :? "            YOUR SCOR
E ";SCORE:? :? :? "            HIGH SC
ORE ";HISCORE
6040 ? :? :? "           ANOTHER GAME
(Y/N)"
6050 GET #1,A:IF A=89 THEN 1000
6060 IF A<>89 THEN ? "THANKS FOR THE G
AME":GOSUB 40:GRAPHICS 0:END
6499 REM RESCUED SCORE SAVED
6500 GRAPHICS 0:POKE 710,0:POKE 752,1:
? :? "          SONAR SEARCH":? :? :
? :? "      RESCUED FROM WATERY GRAVE
!"
6510 GOSUB 40:GOTO 6010
6999 REM TITLE AND INSTRUCTIONS
7000 POKE 752,1:POKE 710,0:? CHR$(125)
7010 OPEN #1,4,0,"K:":DIM A$(300)
7020 DL=PEEK(560)+PEEK(561)*256+13
7030 IF PEEK(DL)=65 THEN 7060
7040 IF PEEK(DL)=2 THEN POKE DL,130
7050 DL=DL+1:GOTO 7030
7060 RESTORE
7070 DATA 72,206,37,6,173,37,6,141,10,
212,141,24,208,104,64
7080 FOR S=0 TO 14:READ T:POKE 1555+S,
T:NEXT S:POKE 512,19:POKE 513,6
7090 DATA 169,111,141,37,6,76,98,228,1
04,162,6,160,0,169,7,32,92,228,96
7100 FOR S=0 TO 18:READ T:POKE 1536+S,
T:NEXT S
7110 X=USR(1544):POKE 54286,192
7120 POKE 709,0:POKE 710,124:POSITION 
9,1:? "S O N A R   S E A R C H"
7130 SOUND 0,0,0,0:POKE 53768,4:POKE 5
3761,168:POKE 53765,168:POKE 53760,254
:POKE 53764,127
7140 FOR P=9 TO 31:POSITION P,2:? "[M]
":NEXT P:FOR P=0 TO 39:POSITION P,8:?
 "_":NEXT P:POSITION 25,7:? "[U][Y][U]
[N]"
7141 REM FIRST ? IS CTRL'M',THIRD ? IS
 CTRL'UYUN'
7150 POSITION 24,8:? "<J>___<H>":FO
R P1=1 TO 7:P=INT(RND(0)*38+1):Q=INT(R
ND(0)*9+10):POSITION P,Q:? "[X]":NEXT
 P1
7151 REM FIRST ? IS INVERSE CTRL'J[3 S
PACES]H', SECOND IS CTRL'X'
7160 POSITION 14,4:? "by R.F.SMITH":GO
SUB 40:POSITION 14,4:? "            "
7170 POSITION 1,6:? "INSTRUCTIONS(Y/N)
":GET #1,A:IF A=89 THEN 7200
7180 IF A<>89 THEN RETURN
7199 REM INSTRUCTIONS
7200 SOUND 0,0,0,0:SOUND 2,0,0,0:? CHR
$(125):A$="      SONAR SEARCH INSTRUCT
IONS":GOSUB 200
7210 FOR X=0 TO 9:POSITION X+4,13:? X:
POSITION 14,X+3:? X:FOR Y=0 TO 9:POSIT
ION X+4,Y+3:? "+":NEXT Y:NEXT X
7220 POSITION 15,5:? "<Y":POSITION 15,
13:? "<X"
7230 ? :A$="MOVE * USING JOYSTICK TO S
AY 3,6":GOSUB 200
7240 ? :A$="PRESS TRIGGER TO FIRE":GOS
UB 200
7250 ? :A$="NUMBER ON GRID = TARGET DI
STANCE":GOSUB 200
7260 ? :A$="NO DEPTH CHARGES!!":GOSUB 
200:? :A$="SHIP WILL BE TORPEDOED AND 
MIGHT SINK":GOSUB 200
7270 POSITION 20,8:? "PRESS ANY KEY":G
ET #1,A
7300 ? CHR$(125):A$="           SONAR
 SEARCH":GOSUB 200
7310 ? :? :A$="...URGENT...URGENT...UR
GENT...URGENT..":GOSUB 200
7320 ? :? :? :A$="ENEMY SUBMARINE PACK
 IN YOUR AREA":GOSUB 200
7330 ? :? :A$="SEARCH - LOCATE - DESTR
OY!!":GOSUB 200
7340 ? :? :? :A$="GOOD HUNTING!":GOSUB
 200
7350 POSITION 20,17:? "PRESS ANY KEY":
GET #1,A:IF A<>255 THEN RETURN
```

■

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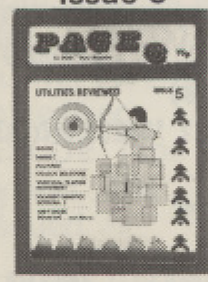
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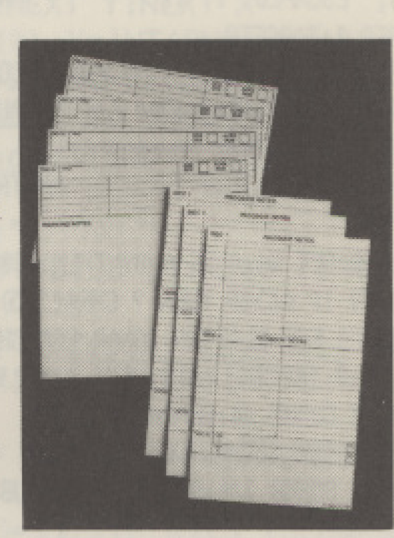
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Peripherals

Make Your 410 Work!

John Dimmer, Elgin, Scotland

Like the majority of Atari owners my system is cassette based so when my 410 went wrong I was virtually computerless since all of my games were on cassette and it seemed pointless typing in any long programs. This situation lasted four weeks and I spent my time reading about hardware and programming. What follows is a summary of that reading regarding the 410 in the hope that you will be able to get better service from your 410. These remarks will of course apply equally to the new 1010 recorder.

There are six relevant commands for the operation of the 410:

Recording	CSAVE	SAVE'C:'	LIST'C:'
Playback	CLOAD	LOAD'C:'	ENTER'C:'

CSAVEd tapes can only be loaded using CLOAD. The tapes are recorded using a short inter-record gap (IRG) and this is the quickest way to record and playback.
SAVE'C:' uses a longer IRG which results in a long tape. You can load the tape using CLOAD, LOAD'C:' or, more interestingly, RUN'C:'
LIST'C:' stores the program in its full ASCII form. Its counterpart is ENTER'C:'. This command, unlike CLOAD or LOAD'C:' will not clear any resident program from RAM and if lines have the same number the old line will be replaced by a new line. LIST'C:' will save all lines whilst LIST 'C:',x,y will save line x to line y.

Both CSAVE and SAVE'C:' use a shortened form of the Basic program by 'tokenising'. A token is a 1 or 2 byte code representing the Basic keyword.

USEFUL POKEs

POKE 65,0 for quiet recording or playback
POKE 54018,52 to turn cassette motor on
POKE 54018,60 turns the motor off

Try putting a music cassette in the 410, press play and type POKE 54018,52. Music while you work!

Here are a number of tips which might help towards trouble free recording and playback

Before you CSAVE or SAVE'C:', type LPRINT in direct mode. Ignore the resulting Error 138. This closes channel 7 and sets the hardware correctly for recording.
Before pressing PLAY, note the initial count. If there is an error on playback, rewind to the count plus one and try again. Repeat as necessary.
If you are unsure of the start position of the program either use POKE 54018,52 or use a normal cassette player to listen for the start of recording.
Try fast forward and rewind if you have an error on loading. Then try to load again.
Use 10 counts to seperate programs on tape. This is to avoid overwriting the 'end-of-file' marker and will make it easier to find the start of the recording.
Avoid using C-90, C-120 or cheap tape as you are more likely to get tape stretch.
Don't use chromium dioxide or metal tapes on the 410 - you will ruin the heads!
Don't put recorded tapes on top of the TV or speakers - the tapes could be degaussed.
Recordings on the old type 410 may not play back on the new type 410 and vice-versa. Beware!
Clean the record and play heads regularly using a proprietary cleaner only.
Finally if you continually have 138, 140 or 143 errors on all your tapes, have your 410 checked by an Atari dealer.

ERRORS

The three common types of I/O errors are:
Error 143 - a bad recording or readback or the cassette or recording could be faulty.
Error 140 - cassette may be faulty or defective.
Error 138 - no information is reaching the computer. Check cable connections, power supplies and finally the tape for data.

All the people I know who have had trouble with their 410's have problems with 'boot' tapes. If you boot tapes by pressing PLAY on the recorder FIRST, try pressing START and turning the computer on and THEN press PLAY before finally pressing RETURN. It may be that the 410 is vunerable to a power surge. If you still have problems, consider having your 410 checked.

I hope that your 410 woes are eased by this article but if you have any further tips, ideas or thoughts I would be delighted to hear them. Send them in to the Editor. ●

Home Entertainment ATARI® NEWS

February 1984

Dear Page 6 Reader,

On checking our files, the last time we published a newsletter in Page 6 magazine (promising more in "an occasional series") was in July 1983. We can only say that time does fly when you're enjoying yourself. And incidentally, in that time, our congratulations to Page 6 on its continuing improvement.

Our series of adverts since have featured our Software Courier mail order service (which more and more customers continue to join each week), and recently we've included a re-print of the Atari XL range of peripherals ad., which starts with "These peripherals will be available soon."

What an appropriate start to the ad. Having said that, we've had in stock (and out of stock at times) the 1010 Program Recorder, the 1050 Disk Drive, the 1020 Colour Printer and Track Ball Controllers. We've been told that we can expect, before the end of February, the 1025 80 Col. Printer, the 1027 Letter Quality Printer and the 64K Memory Module upgrade for 600 XL's and the Super Controller. Well that's what we're told! (Also "not yet" for the Touch Tablet.)

The point about all this is that, sure or unsure about deliveries, we do know that we do have (either with us and/or promised) the best and fullest home computer and peripherals range currently announced - bar none! And the widest range of quality software in support. For us, Atari remains as leader. Some manufacturers sell more "boxes" but they certainly don't match the wonderful world of Atari.

And we remain fully committed with our sales support of Atari. We know that our customers at our Home Entertainment Atari Centers in Birmingham and Preston and our "Software Courier" mail order customers like it to be just that way. We share their enthusiasm.

If we haven't met you yet, please call, write or phone and find out what we're about. We would welcome the opportunity to be of service.

Happy computing,

Jim Wingfield

JIM WINGFIELD

PS. WE HAVE A FREE "SUPER CATALOG" ON CASSETTE (16K AND 48K VERSIONS) OFFER (One per customer) UNTIL 31 MARCH 84. PLEASE ASK FOR DETAILS AND QUOTE PAGE 6.

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